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AUTHOR Lockheed, Marlaine E.; Harris, Abigail M.
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ABSTRACT

The second of a two-volume report on the study of sex equity in classroom interaction presents three chapters that detail the use of the APPLE observation system used in the study, describe student and teacher measures, and present data related to gender differences in teacher-student interaction. The two-year study (1980-82) involved 38 fourth- and fifth-grade classrooms in two districts in California and Connecticut. A total of 356 boys and 359 girls served as target students during the first year and 132 boys and 139 girls served as target students during the second year. Over 8,500 student hours of observation were augmented by in-depth interviews with teachers who participated in the study. In addition, an APPLE observation system was used as the study's major tool for observing and preserving classroom processes for analysis. Data from the study do not support the notion that classroom teachers play a major role in creating and maintaining inequities. Despite findings that boys are more disruptive (and thus receive more teacher attention), data suggest that teachers respond to the nature of the student behavior rather than to student gender. Findings concerning peer interaction showed that despite an overwhelmingly strong same-sex preference on the part of both boys and girls, the students actually engaged in cross-sex interaction quite frequently and with no observable consistent differences from same-sex interaction. Eleven appendices, comprising over half of the report, consist of an APPLE observer manual, a lexicon of APPLE terms and numeric codes, observation sheets, data tables, and measuring instruments and instructions. (LH)

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A STUDY OF SEX EQUITY IN CLASSROOM INTERACTION

FINAL REPORT

VOLUME II

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Marlaine E. Lockheed, Project Director

Abigail M. Harris, Associate Project Director

Division of Education Policy Research & Services

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EDUCATIONAL TESTING SERVICE
PRINCETON, NJ 08541

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Volume II

CHAPTER I

The Observational System

A. Why the APPLE System

A major objective of this study was to build upon the findings of previous studies of classroom interaction to substantially increase the available knowledge of the classroom environment as it is experienced by and effects boys and girls and to identify patterns of teacher-student and peer interaction that are related to student outcome measures. The primary differences between this and previous observation studies of classroom interaction are the inclusion of the sex of the observed student as a relevant variable, the inclusion of observations of peer interaction, and the recording of the gender composition of classroom work groups. The observations permit the examination of gender differences in both teacher and pupil behaviors as well as gender differences in sequential chains of behaviors.

In order to accomplish these objectives, we used an observation system that was comprehensive and naturalistic and yet also provided a system for classifying and analyzing observable behavior: The APPLE (Anecdotal Processing to Promote the Learning Experience) system. APPLE is a low inference, natural language observation system in which trained observers record events for targeted children, as they occur in the classroom (Lambert & Hartsough, 1971; Lambert, Hartsough, Caffrey, & Urbanski, 1976). Each event or record includes the child's activity and teacher response. It describes what the child was observed to do, the antecedent conditions producing the observed behavior, the teacher or other pupil response to the child, if any, and the outcomes of the behavior. The observer records events in natural English sentences as they occur. Extensive lexicons of teacher and pupil behavior and activities are then used by trained coders to translate the observer's records into a quantifiable format. The lexicons have been expanded and refined over years of use; they can be augmented by the addition of new entries at any time that an observable set of behaviors cannot be adequately assigned an existing lexicon term.

The open-ended nature of the APPLE system made it ideally suited to the observational task of this project. Rather than monitoring the occurrences of a set of predetermined behaviors, such as those defined in most categorical systems, a sampling of all of the observable pupil and teacher events was recorded by the APPLE observers and was later examined. Instead of attempting to determine *a priori* the interaction chains of interest, APPLE facilitated the identification of naturally occurring chains we then analyzed

further. For example, the frequencies of a particular pupil behavior for boys and girls may have been similar, but the teacher or other pupil antecedent behaviors or responses may have been sex differentiated and may have varied depending upon instructional context, classroom organization or subject matter, for example. APPLE enabled us to capture entire segments of interaction and to describe the relationships of behaviors occurring in classrooms from a myriad of perspectives.

B. Description of the APPLE Observation System[1]

The APPLE observation system (1) requires observers to provide low inference descriptions of pupil and teacher behavior, (2) specifies classroom organizational structures, (3) describes teacher-student and peer interactions, and (4) describes the content of the instructional program. In the developmental work for the APPLE system, observers were instructed to record anything that happened to the designated pupil(s) including anything that was observed to happen, reported to happen, or any information which would be pertinent to the pupil in school, especially the interaction of the pupil with his or her instructional program, teachers, and peers. Each segment or piece was to be considered an "event," and the observer was instructed in methods for describing this event as completely as possible.

After some preliminary work, the concept of an APPLE event was revised and focused specifically around what the observed pupil was doing. Events describe what the pupil was observed to do and include statements about the antecedent conditions of the observed behavior, the responses to the student if any, and the consequences of the behavior. The event in the APPLE system is written as a sentence and is accompanied by the antecedent/consequence descriptions. The accompanying information associated with the event is part of the data that the observer must record. By treating important antecedents and consequences of pupil events as different classifications of information, data from the APPLE observation system can be analyzed as a multiple category observation system in which the informational categories and combinations of categories to be used can be selected for each of the particular research objectives.

B.1. Mandatory Information in the Observation Record

Recording events in isolation of descriptions of the setting in which they occurred limits the value of the data collected. Consequently, the observer is required to provide several types of mandatory information to be carried along with the pupil events. The types of mandatory information which have been considered relevant to pupil events are: (1) the instructional activity of the teacher, (2) the subject matter being covered, (3) the particular learning activity of the student, (4) the instructional context--the relationship of the teacher to the instructional activity of the

child (e.g., whether the pupil is working under the direct supervision of the teacher, working in a group with other pupils or working independently, etc.), (5) the antecedent behavior, (6) a description of the event, for example, observed target pupil behavior, (7) the quality of the target pupil behavior with respect to the classroom expectations, (8) the response to the event behavior, and (9) the information required to identify the teacher, target pupil, observer, and the date and time of the observed event.

B.2. Major Categories of the APPLE Observation System

Some of the major categories or areas of mandatory information used in this project are described briefly below. Much of this information was obtained from the Manual for APPLE Observers (Lambert, Hartsough, Caffrey, & Urbanski, 1976) and is defined in greater detail in the manual (see Appendix A).

(1) Teacher Activity: The observer notes as specifically as possible the teacher's activity at the time of the event. Some examples are "answering student questions," "circulating around classroom," "reminding," etc. The observer refers to the "Teacher Activity Lexicon" (Appendix B) for guidelines as to the desired specificity.

(2) Subject Matter: The general subject matter area of the class period such as "Mathematics," "Reading," etc.

(3) Pupil Activity: This entry refers to the specific content of the target pupil's instructional or classroom program in progress at the time of the event. Examples are "addition work sheet," "taking dicatation," etc. The observer refers to the "Pupil Activities Lexicon" (Appendix B) for guidelines as to the desired specificity.

(4) Context: This entry provides a description of the kind of classroom setting that is operative at the time of the event. Specifically there are four aspects of classroom leadership and organization that are reflected in the context code. This is the only entry for which the observer must learn a lexicon of codes. Observers use a prescribed set of codes to indicate: (a) Who is in charge of the instruction, (b) To what extent is the target pupil working in the same subject matter as the rest of the class, (c) To what extent are the assignments individualized within the subject matter, and (d) What is the working relationship of the target pupil to others in the class.

(5) Description of Event: An anecdotal record of an observable behavior of the target pupil. Observers record activity as well as inactivity, for example, if the target pupil is quietly listening to the instruction, this is recorded as

an event. The observer simply records on a regular basis what the target pupil is doing. The "Pupil Behavior Lexicon" (Appendix B) provides examples of event names.

(6) Quality of Pupil Behavior: The observer rates the pupil's behavior with respect to the academic/nonacademic expectations of the typical classroom. A "plus" is assigned to behaviors that are associated with appropriate, productive classroom behavior; a "minus" would be assigned to inappropriate behavior; and a zero rating indicates that the quality of the behavior is neutral or indeterminate with respect to the requirements of the classroom at the moment of the event.

(7) Teacher/Pupil Response: For each pupil event, the observer must record a teacher response or indicate "none" or "not applicable;" the observer also notes any other pupil response(s) to the event, if they occur.

B.3. Modifications to the APPLE System

One of the most valuable characteristics of the APPLE system is its flexibility. In order to take full advantage of this quality and to maximize the usefulness of the observation data, we met with Dr. Carolyn Hartsough, a developer of the APPLE system, to review the project objectives in relation to the types of data that could be derived from the APPLE observation system. After this, we made two modifications in the system that were subsequently incorporated into the observer manual and observation form.

B.3.a. Peer Interaction Chains

The first modification involved increasing the focus on recording peer interaction chains. The primary concern of most earlier users of APPLE was on teacher-student interactions, and as a consequence the procedures for recording these chains were clearly established and defined. Equally important to the objectives of this project were peer interactions. By expanding the APPLE system to include procedures for recording peer interactions that were parallel to those used previously for recording teacher-student interactions, it became possible to collect both types of information simultaneously.

"Antecedent pupil behavior" was added to correspond to "antecedent teacher behavior." These two categories of behavior are defined similarly; both are limited to behaviors that directly initiate or precipitate the target pupil behavior. There are, however, many instances when neither teacher nor pupil antecedent behaviors occur. "Other pupil response" was also added, corresponding to the "teacher response" category. Pupil behavior lexicon codes were found to be adequate for most of these other pupil behaviors.

B.3.b. Specification of Student Gender

The second area of modifications in the APPLE system that we undertook was an obviously necessary series of revisions related to recording student gender and the gender composition of class groupings or leadership. Although the gender of the target student was easily discernible from his or her student code, it would not have been possible with the unrevised APPLE always to ascertain the gender of students with whom the target pupil interacted. Consequently, revisions in the manual and regular reminders to observers were required to ensure that the sex of any students mentioned, aside from the target pupil, was indicated.

We also revised two of the "context" lexicons. First, the lexicon for the first context code was expanded to clarify those instances in which the target pupil was being tutored or otherwise under the charge of another student. Rather than using a common indicator for both boys and girls, a "B" or "G" was used to indicate the sex of the student in the leadership position. The second revision was in the lexicon for the fourth context code: the code that refers to the working relationship of the student being observed to the others in the class. If the target student was part of a group of students that had been directed or expected to work together, it was necessary to clarify the sex composition of the group. Groups were identified as all girls (G), all boys (B), or both boys and girls (X).

C. Conducting the Observation

C.1. Recruiting and Training of Field Observers

Experienced credentialed teachers were recruited in both sites to be trained as field observers. An important quality sought in all of the observers was the ability to "fit in" with the school and classroom and minimize the potential classroom disruption due to the observation activity. Also important was the likelihood that the selected observers could maintain a high degree of objectivity in their recordings of classroom occurrences and a neutrality and friendliness in their dealings with teachers and school personnel.

The field observers were expected to help facilitate communication between project staff and participating teachers. Teacher input or feedback was frequently fed through the observers to project staff; concerns regarding scheduling difficulties, roster changes, and questions regarding project activities were often communicated to project staff through the observers. It was critical that they were reliable, responsible, and able to cope sensibly with unexpected crises. Expending efforts to locate individuals with these exceptional characteristics was one step that was taken to help assure the quality of the observation data that would be collected.

Careful planning and staff effort also went into the training and final selection of the APPLE observers. This is critical to ensuring high interobserver reliability. In both sites, twice the number of observers than were actually needed were trained and provided with opportunities to practice and receive feedback. Three-day intensive training sessions were conducted at each site by Dr. Carolyn Hartsough of the University of California at Berkeley. After initial instruction, each trainee went into a classroom with an experienced observer; they observed together, compared their observations and discussed discrepancies. A second paired observation was made, repeating the process of comparing and discussing. The sessions were continued until the levels of trainer-trainee and trainee-trainee agreement were high and the trainees had become proficient.

Also, at the end of each training day, project staff attending the sessions met with Dr. Hartsough to review trainee observation sheets and share comments regarding trainee progress toward the criterion level of competence. Periodic group training sessions were held to discuss common questions or errors. At the conclusion of the three days of training, practice, and feedback at each site, field observers were selected from the trainee pool. Four observers in Year One and three in Year Two served in Northern, and five observers in Year One and four in Year Two served in Montevista.

In addition to this initial period of training, observers were contacted by project staff shortly after they completed at least two days of observation. Any problems staff had with observer performance were discussed. Staff reviewed any questions or concerns of the observers and encouraged observers to call staff whenever questions or problems arose. From the beginning, communication between observers and staff occurred on a regular basis.

Periodically, staff reviewed the completed observation forms. Unusual items were questioned, and instances where the information was ambiguous or incomplete were pointed out. Also, since the encoding process began while observations were being conducted, the coders proved to be another source of valuable observer feedback. All of these training and feedback activities were designed to ensure high interobserver reliability and eliminate the risk of procedural differences among observers.

C.2. Scheduling Observers

Each of the twenty-nine participating teachers in Year 1 was observed for eight full days over the course of the academic year; nine of the 18 participating teachers in Year 2 were observed for six full days over the course of the year. Observations were conducted in monthly cycles--half prior to the teacher training workshops and half cycles following the training each year.

Observation and testing schedules were approved by all districts and teachers, and monthly calendars were generated for observers and participating teachers and their respective school principals. An example of such a calendar is included in the Appendix; teacher names have been replaced by teacher identification codes. Typically, the teacher's last name, the cycle number and the scheduled observer's name were provided for each time that an observation was scheduled. Alternate teachers were designated for observation, in case observation of the scheduled teacher was not possible. Double observations were conducted to verify interobserver reliability, i.e., two observers were scheduled to be in the same classroom simultaneously.

C.3. Selecting and Identifying Target Students

To accurately describe all of the behaviors occurring in a classroom is virtually impossible; one alternative is to attempt to identify representative behavior. However, without providing observers with specific guidelines and reducing the observation task to a manageable level, one cannot begin to assume that what observers randomly elect to record of classroom behavior is in actuality representative. For this project we determined that for each observation day a subset of pupils would be selected for observation. This subset of pupils was called a "target" group, and observers were provided with guidelines for sampling and recording the behaviors of these students.

Unique listings of target pupils to be observed each day were provided to each observer. These listings were generated utilizing random sampling techniques and based on classroom roster and Student Descriptive Questionnaire background data. For each observation day, three boys and three girls and two alternates were designated as target students to be observed during the day. Discrete identification of the target pupils in the class was facilitated through the use of a classroom seating chart.

In one instance, a teacher was unwilling on the first day of observation to assist the observer in constructing a seating chart. The teacher was, however, agreeable to the use of student name tags. On that day and some subsequent observation days in that classroom, students wore or put name tags on their desks; the observer then located target students and constructed seating charts using the name tags.

C.4. Conducting Observations

On scheduled observation days, observers arrived at the designated schools approximately thirty minutes before classes were to begin. After checking or signing in at the school office, they located the teacher they were to observe and began familiarizing themselves with the school and teacher. If the teacher was absent or if an unforeseen event prevented the observer from observing the scheduled teacher's class on the designated day, the observer

immediately proceeded to the classroom of the nearest teacher alternate. When this occurred, project staff were notified of the change later during a break in the school day in order to facilitate rescheduling.

In Northern, a major contributor to scheduling difficulties was snow: days were cut short or school was cancelled and all of the observations planned for a given day had to be rescheduled. Also, the pupil compositions of the Northern classroom shifted more frequently than was the case in Montevista classrooms. Consequently, it was harder to identify target pupils, pupils spent less time with their homeroom teachers, and as could be expected, the volume of various kinds of observation data collected in the two sites was somewhat different.

Each observation day, the observers at both sites began by working with someone in the classroom (teacher, aid, or student) to construct a diagram of the seating arrangement in the classroom. The completed seating chart facilitated the identification by the observer of the students that had been targeted to be observed during that particular day of observation. During Year One, observers also completed an "Opening Classroom Observation" sheet and one or more "Class Summary" sheets. Observers were encouraged, as well, to add their comments and any relevant comments.

During the day, the recording of APPLE observations was the primary activity of the observers. They assumed a role in the classroom "somewhere between participant observer and 'potted palm'" (Lambert, Hartsough, Caffrey, & Urbanski, 1976, p.6). Depending on the activities being carried on in the class by the students and teacher, the observers were expected to position themselves in such a way as to maximize visual and auditory access to occurrences in the classroom while at the same time minimizing their impact or "presence" in the classroom. The objective was to create a situation in which the natural conditions of the classroom were unchanged and the observer could accurately record occurrences in these conditions.

In order to insure the representativeness of the APPLE data collected, observers were provided with some procedures and some guidelines for recording events. As was mentioned earlier, one procedure that was used was to designate a representative subset of students to be observed. Another procedure required that observers make an observation each time a target pupil's learning context changed. In this way, the observations provided a continuous record of the instructional contexts occurring within the classroom as the day progressed.

Beyond the above procedures, observers received some additional guidelines for sampling events: (1) observers were advised that it was useful to begin the observation period by making at least one observation per target pupil; (2) observations were to be recorded as quickly as possible with a minimum of two observations for each

five minutes of class; and (3) observers were directed to scan the class and rotate through the target pupils until the context of one or more of the target pupils is changed. A new observation was then made to record this change. The observer manual is included in the Appendix; a copy of the observation form used in Year Two may be found in Figure 1.1.

D. Encoding APPLE Observations

All of the observations were encoded at ETS in Berkeley by trained research assistants. Initially, one encoder with many years of experience was recruited to review our modifications to APPLE and to assist project staff in setting up coding procedures. Previously, the main task in the encoding process had been to use an extensive set of lexicons to assign computer lexicon terms to each mandatory category. Because of the additions to the APPLE system, a variety of previously used encoding procedures needed modification. Also the magnitude of the task demanded that the coding task be partitioned and systems be devised to facilitate the smooth and systematic transmittal of materials between regular project staff, the observers, and the APPLE encoders.

The volume of the data and the necessity for rapid processing dictated that the encoding and key entry processes be streamlined as much as possible. In Year One, this was accomplished by transferring data to coding sheets; in Year Two, lexicon terms were placed directly on the observer forms and key entry took place from the forms.

Because no specific lexicons existed to encode "Antecedent Teacher Behavior," "Antecedent Pupil Behavior," and "Other Pupil Response" the encoders met weekly to discuss and review ambiguous situations and new terms. Most of the "Antecedent Teacher Behaviors" were encoded using terms from the "Teacher Response" lexicon and the new pupil categories were usually encoded using the "Pupil Behavior" lexicon.

D.1. Recruiting and Training of Coders

All of the people recruited to be trained as encoders had had extensive experiences in schools; one had trained in the initial observer trainee pool. In Year One, six different coders encoded the observation forms; in Year Two, two of the original six coders continued to encode data. The training of coders was done by Ms. Linda Jarvis, an experienced APPLE coder. All coders were provided initially with the complete APPLE Lexicons, APPLE Manuals for Observers, a set of observation sheets that had already been encoded as examples, and a set of practice observation sheets. After each of the coder trainees had reviewed the written materials and the completed sheets, they were helped to begin to code some of the practice sheets. Further discussions and sometimes one-to-one tutoring were used to clarify questions and to correct coder misconceptions or errors.

Following the first intensive training sessions, coders were expected to complete a set of observations independently and bring in the completed coding sheets to compare with the codings that Ms. Jarvis had done on the same set of observations. Discrepancies were discussed and the process repeated until a criterion level of agreement between the experienced trainer and the trainee could be attained. Throughout the coding process, Ms. Jarvis reviewed random samples of completed sheets of each of the coders. If a consistent error or problem was encountered (e.g., one coder had repeatedly misspelled one of the lexicon terms, another made "h's" that looked like "k's"), the coder would go back over all previously completed sheets and correct the error.

D.2. Encoding Procedures

Once trained, coders were randomly assigned sets of observations: all of the observation sheets for one teacher for one day of observation. At weekly meetings, materials were distributed and collected--checked out and checked in. The coders used the meeting time to review problem areas, discuss possible new lexicon terms, and work together to clarify ambiguous observations. They also used some of the time to encode independently. Unlike observing, the data for encoding is fixed. It can be put away and pulled out afresh, discussed and shared, and group decision-making seemed to assist coders in making finer distinctions between the lexicon terms than if all of the coding had been done in isolation.

D.3. Identification of New Lexicon Terms

Throughout the encoding process, coders identified occasional descriptions of behaviors that could not be encoded using existing terms. Coders were instructed to note the sequence number of the event and to bring up the example at the weekly meeting. After discussion, if there were no appropriate existing terms, a new term was generated. All coders maintained a running list of the newly created terms; these new terms were added to the lexicon lists.

D.4. Preparing Data in Machine-Readable Format

Once the encoding process was completed, the data were key-taped, verified and edited. Because the actual lexicon terms were key-taped rather than, for example, numbers representing each of the terms, the sources of error in this aspect of the process were kept to a minimum. Whenever the key-taped letter configurations within a given set of columns did not match one of the actual lexicon terms associated with those columns, the record was identified for editing. Coder or key-entry errors either in spelling or in column alignment were identified and corrected prior to the final data analyses. These errors represented less than 10% of the coding or key-entry effort.

After a preliminary listing of the frequencies of all target student behaviors, some reduction in the number of categories was

accomplished. Infreqently occurring terms were consolidated with other terms to construct composites. A list of pupil behavior terms from Year One showing these consolidations is provided in the Appendix.

After the raw observations were cleaned, all lexicon terms were reduced to numeric codes for efficient storage and retrieval. A list of these numeric codes and the associated term is provided in the Appendix.

E. Reliability

E.1. Interobserver Reliability

The methods employed for training the APPLE observers ensured a high degree of interobserver reliability. Training continued until trainer-trainee and between-trainee levels of agreement achieved a criterion level. Periodic review of observation sheets with individual and group feedback sessions helped maintain the comparability of the observations that were produced as the year progressed.

Another method used to monitor interobserver reliability was to conduct double observations, i.e., assign pairs of observers to observe in a classroom simultaneously and compare statistically the resulting observation forms. Approximately 30 hours of post-training double observations were done in Year One and 48 hours in Year Two. Experience in previous studies such as the BTES (see Lambert and Hartsough, 1976) suggests, however, that reliability estimates derived in this fashion may be unreliable. This is not surprising. Consider that the two observers were in the room at the same time. There were six target students to be observed and their behavior recorded whenever there was a change in what they were doing or in their actions. The observers would be continually scanning these pupils; two observers would have had to scan at identically the same time in the same way to report the same events. Further complicating matters, observers were trained to be unobtrusive in the classroom; the observers would probably have had difficulty avoiding attention if both were simultaneously watching the same pupil. Because of this problem, interobserver reliability estimates were based on classroom contexts rather than on student behavior.

E.2. Intercoder Reliability

Intercoder reliability was assessed through blind double coding of observation records. A separate repeated measures analysis of variance was conducted for each context code, each teacher activity code, and for the type and quality of each antecedent teacher behavior, antecedent pupil behavior, event, teacher response, and other pupil response; the coders were treated as the repeated measures. Reliabilities for 95 variables, categorized into 18 groups, and five double codings were computed, yielding a total of

90 analyses of variance. Significant differences ($p < .10$) between coders were found for four comparisons, fewer than would be expected by chance. Cronbach's alpha ranged from .88 to 1.0, with over 80% of all reliabilities having = .98 or better. Results of these analyses may be found in the appendix.

F. Feasibility of the APPLE System

F.1. Utility

The APPLE observation system provides a rich data base from which a number of important questions about classroom interaction can be addressed. It is relatively unique insofar as the system provides sequences of events, which allows the researcher to pose temporal questions as well as relational ones of the data. The modifications that we made on the APPLE system for this study made it unique in its ability to address questions of sex differences in classroom interaction.

F.2. Trainability

Because the system is a low-inference system, training observers and coders was not a problem. Interobserver and intercoder reliabilities attest to this. Training is a time-consuming activity, however, and refresher training is absolutely necessary in a two-year study such as this. Training costs are high.

F.3. Cost

The major drawback to the APPLE observation system is the amount of time and associated costs required for processing the data. In the first year of the study, over 23,000 observation records (not including double observations) were collected; in the second year, over 5,500 records were collected. In addition, several hundred double observations were collected each year. Each record was read by a coder who encoded the observations. Then each record was key entered and verified. After this, each record was reviewed for quality control. No less than one hour was spent on every record before any analysis could be conducted. At $5.00/hour--only slightly more than minimum wage and considerably less than standard ETS costs for research assistance--this would amount to $115,000 for Year One and $27,500 for Year Two. Clearly costs of this nature are difficult to absorb in any educational research project.

F.4. Reducing Costs

Since the primary costs involve the translation of data from one form to another--observation records to coded observations, coded observations to machine-readable data, machine-readable data to numeric coded for analysis--any change in the process that could

eliminate one of these steps would greatly reduce costs. Two possibilities are: (1) using small, notebook-type computers for entry of observation data; (2) using machine-scannable observation sheets.

F.4.a. Notebook Computers

In the last two years, several companies have introduced small (8 1/2 inches by 11 inches) computers that display about eight lines of text and that can be attached to some data storage device, like a tape recorder, and can also be attached to another computer through a communications package. An observer could sit in a classroom and respond to preprogrammed prompts by typing in observations. With the APPLE system, prompts could include teacher activity, subject matter, pupil activity, context, target student behavior, and so forth. The observation record could then be transmitted to a central location for encoding. The coders would copy the record and encode it using some electronic editing program; the original records would be left in their original form for reference. This approach eliminates the need for separate key entry of data, as the observers and the coders actually perform this task. It is possible that the entire operation could be done on a microcomputer with sufficient RAM.

F.4.b. Machine-Readable Observation Sheets

A second approach, which relies on more conventional methods of data gathering, would change the observation form so that it contains a segment that could be directly scanned by an optical scanner. Parts of the observation record that are not encoded but used exactly as the observer indicates could be completed by the observer. The sections that require encoding would have spaces for recording the encoded data in a format suitable for optical scanning. This approach would eliminate the need for separate key entry of data, while not requiring the coders or the observers to engage in any key entry.

Footnotes

[1]Portions of this section come directly from the following report: Lambert, N. M., & Hartsough, C. S. APPLE Observation Variables and Their Relationship to Reading and Mathematics Achievement. Beginning Teacher Evaluation Study: Phase II Final Report: Volume III.1. Princeton, NJ: Educational Testing Service, 1976.

Table 1.1

Intercoder Reliability Repeated Measures

Analysis of Variance Results

Coders

Variable	5/2	2/6	1/3	3/4	2/5	Number of Variables
Context 1	2.454[a]	.790	0.0	.545	0.0	4
Context 2	1.000	.909	0.0	1.000	0.0	3
Context 3	.750	.489	0.0	1.000	0.0	3
Context 4	5.000*	1.247	0.0	.210	0.0	6
ATBLEXICON	1.000	6.359**	6.250**	0.0	1.000	7
APBSEX	9.000*	.790	0.0	.086	0.0	4
APBQUAL	2.250	.801	0.0	.092	0.0	5
APBLEX	2.250	.801	0.0	.092	0.0	5
EVENTSEX	.013	.427	0.0	.022	0.0	9
EVENTQUAL	.230	.243	0.0	.073	0.0	3
EVENTLEXICON	.228	.459	0.0	.255	0.0	7
TRESPLEXICON	2.03	.392	0.0	.086	0.0	8
OPUPSEX	1.416	.393	.049	.026	.023	6
OPUPQUAL	.070	.065	.216	.909	.680	5
OPUPLEXICON	.428	.320	0.0	.232	0.0	6
TACTLEXICON	.013	.790	0.0	2.000	0.0	4
PACTLEXICON	4.500	.260	0.0	.020	0.0	7
TPUPQUAL	.001	1.000	0.0	1.000	0.0	3
ALL VARIABLES	.628	13.748***	.182	2.575	.068	95

NOTE

[a] The figures are F-Values

*** < .01
** < .05
* < .10

Table 1.2

Intercoder Reliability Analysis Results

Alpha Values

Coders

Variable	5/2	2/6	1/3	3/4	2/5	Number of Variables
Context 1	.9993	.9938	1.000	.9977	.9998	4
Context 2	.9980	.9979	.9978	.9996	1.000	3
Context 3	.9984	.9951	.9969	.9996	.9993	3
Context 4	.9996	.9967	.9998	.9955	.9998	6
ATBLEXICON	.9998	.9718	.9998	1.000	.9985	7
APBSEX	.9999	.9975	1.000	.9948	.9986	4
APBQUAL	.9997	.9975	.9997	.9951	.9988	5
APBLEX	.9997	.9975	1.000	.9951	.9985	5
EVENTSEX	.9708	.9850	.9873	.9544	.9844	9
EVENTQUAL	.9600	.9643	.9969	.9778	.9975	3
EVENTLEXICON	.9954	.9922	.9994	.9969	.9947	7
TRESPLEXICON	.9994	.9931	.9994	.9897	.8634	8
OPUPSEX	.9941	.9952	.9987	.9848	.9775	6
OPUPQUAL	.8866	.9260	.9578	.9688	.9442	5
OPUPLEXICON	.9964	.9914	.9987	.9971	.9970	6
TACTLEXICON	.9261	.9894	.9960	.9997	.9906	4
PACTLEXICON	.9994	.9723	.9848	.9102	.9996	7
TPUPQUAL	-.9177	.9983	1.000	.9996	1.000	3
ALL VARIABLES	.9575	.9932	.9984	.9923	.9903	95

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Figure 1.1

APPLE Observation Form

Time	Subject Matter	Observer	Date	Teacher	School	Page	Cycle	Teacher	Observer

Code	Context	Group Size	Context Time

Teacher Activity:

Pupil Activity:

Observed Pupil				Antecedent Teacher Behavior	Antecedent Pupil Behavior				Event	Teacher Response	Other Pupil Response			
B	G	T	O	None	NA	B	G	X	None	NA	+ 0 -	+ 0 -	None	NA	B	G	X	None	NA	+ 0 -

Ante. Teacher Behavior:

Ante. Pupil Behavior:

Descrip. of Event:

Teacher Response:

Other Pupil Response:

Code	Context	Group Size	Context Time

Teacher Activity:

Pupil Activity:

Observed Pupil				Antecedent Teacher Behavior	Antecedent Pupil Behavior				Event	Teacher Response	Other Pupil Response			
B	G	T	O	None	NA	B	G	X	None	NA	+ 0 -	+ 0 -	None	NA	B	G	X	None	NA	+ 0 -

Ante. Teacher Behavior:

Ante. Pupil Behavior:

Descrip. of Event:

Teacher Response:

Other Pupil Response:

Observer_____

Teacher Observed_____ School_____

Date Observed_____ Cycle_____

OBSERVER DAILY LOG

-Periods- Observing Times	Duration # Minutes	Subject(s)	Boys Observed	Girls Observed	% Home- Room	Observation Page #s	Comments
TOTAL							

BOYS	Name	ID Code	Race	Description	GIRLS	Name	ID Code	Race	Description
Target 1					Target 1				
Target 2					Target 2				
Target 3					Target 3				
Alternate					Alternate				
Other Boy 1					Other Girl 1				
Other Boy 2					Other Girl 2				
Other Boy 3					Other Girl 3				
Other Boy 4					Other Girl 4				

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CHAPTER II

Student and Teacher Measures

A. Description of the Student and Teacher Measures

To obtain descriptive information regarding the student population and to measure relevant student and classroom outcome variables, five student and teacher instruments were developed and administered to the study participants: (1) Student Descriptive Questionnaire completed by the homeroom teacher; (2) Classroom Activities Questionnaire completed by the student; (3) sociometric roster rating form completed by the student; (4) sociometric roster rating form completed by the teacher (Year One only); and (5) group decision-making exercise completed by students individually and in groups. Data obtained from these instruments included basic demographic information regarding the students, measures of student attitudes and self-perceptions, indices of classroom experiences, measures of social cohesion and cleavage within the classroom, and measures of student influence in cooperative groups. Copies of the instruments and their administration manuals are presented in the Appendix.

With the exception of the student descriptive questionnaire, all instruments were administered twice annually, once in the fall and once in the spring. Classroom rosters and student descriptive questionnaires were completed by teachers for the students in their homeroom classes. Student sociometric and group decision-making instruments were administered in class by ETS research staff; teacher sociometric instruments were completed individually by teachers and were returned to ETS separately. The Classroom Activities Questionnaire was group-administered by the teachers to their homeroom classes.

A.1. Student Descriptive Questionnaire

Student Descriptive Questionnaires served to identify all students in a homeroom class, and to provide the following information about each child: grade, sex, racial or ethnic group, English language ability, reading level, presence or absence of physical handicap, presence or absence of emotional handicap, presence or absence of educational handicap, participation in a subsidized school lunch program. Teachers were paid for completing the forms.

A.2. Classroom Activities Questionnaire

This questionnaire, composed of 76 items, provided a major source of student outcome measures. The items on the questionnaire were grouped, a priori, into four attitude scales, two self-perception

scales, and two experience indices. All scales, after recoding, were composed of dichotomous items. Each of these scales will be discussed separately; the scales are presented in their entirety in the Appendix. Tables appear at the end of this chapter. After scale computation, reliabilities--using Cronbach's alpha--were calculated for the scale with rotating single item deletions to check for the effect of each item on the reliability of the scale as a whole. These reliabilities for the scales by grade and by gender for the Year One pretest and posttest appear in Tables 2.1 and 2.2.

A.2.a. Student Competence Scale

The purpose of this scale was to measure student beliefs regarding the relative competence of boys and girls at school-related tasks. The scale contained eight items of the type, "Think of the best math student in your class. Is this person a boy or a girl?" The possible range for the scale was 0-8 with the higher value representing a belief of greater female competence. The alpha coefficient for reliability was .76 for the pretest and .79 for the posttest, computed on the Year One sample.

A.2.b. Gender Stereotypes Scale

The purpose of this scale was to measure gender stereotypes other than those related to competence. The scale contains eight items of the type, "Do you think girls and boys are interested in the same things?" All eight items were put into a single scale having a possible range of 0-8, with the higher score representing a less stereotyped attitude. The alpha coefficient for reliability was .49 for the pretest and .51 for the post-test, computed on the Year One sample.

A.2.c. Attitude toward Cooperation Scale

The purpose of this scale was to measure attitudes toward cross-sex interaction in the classroom. The scale, which was adapted from the Attitudes toward Cross-Sex Interaction subscale of the Lockheed-Harris Sex Role, Cross-Sex Interaction and Female Leadership Scale (Parks, Bogart, Reynolds, Hamilton, & Finley, 1979), contains six items of the type "Think of three people in your class that you would choose to do school work with. Are they all boys, all girls or both boys and girls?" For this scale, cross-sex and mixed-sex responses were combined, according to the sex of the respondent, into a scale having a possible range of 0-6, with the higher value representing a more positive attitude toward cooperation. The alpha coefficient for the pretest was .50 and for the posttest was .56, computed on the Year One sample.

A.2.d. Leadership Attitude

The purpose of this scale was to measure attitudes toward male or female leadership in the classroom. The scale was comprised of

seven items of the type, "Who make better leaders, boys or girls?" The possible range for this scale was 0-7 with the lower value representing an attitude favoring male leadership and the higher value representing an attitude favoring female leadership. The alpha coefficient for the pretest was .74 and for the posttest was .72, computed on the Year One sample.

A.2.e. Leadership Self-Perception

The purpose of this scale was to measure self-perceptions of leadership. The scale was comprised of twelve items of the type, "I like being in charge of a group of other students in my class" with a "Yes" or "No" response option. The possible range for this scale was 0-12 with the higher value representing a more positive perception of one's self as a leader. The alpha coefficient of reliability was .53 for the pretest and .63 for the posttest, computed on the Year One sample.

A.2.f. Problem Solving Self-Perception

The purpose of this scale was to measure self-perceptions of problem-solving ability. The scale, which was adapted from Covington (undated) by permission, was comprised of fifteen items of the type "I am often curious about unexplained things around me and want to try to understand them" with a "Yes" or "No" response alternative. The possible range for the scale was 0-15, with a higher value representing a more positive leadership self-perception. The alpha coefficient of reliability was .61 for the pretest and .68 for the posttest, computed on the Year One sample.

A.2.g. Index of Cooperative Experiences

The purpose of this scale, which was adapted from the Experience of Cross-Sex Interaction Sex-Scale of the Lockheed-Harris Sex Role Cross-Sex Interaction and Female Leadership Survey (Parks, Bogart, Reynolds, Hamilton, & Finley, 1979), was to measure the extent of cross-sex cooperation a child had experienced in class under the guidance of the teacher. The index contained five items of the type, "Did the teacher who taught you math yesterday or today ask you to work at the same table or on a project with other students?" The response alternatives described different possible groups, including mixed-sex groups. The possible range of this scale was 0-5, with the higher value representing more cooperative experiences. The alpha coefficients were .45 for the pretest and for the posttest .48, computed on the Year One sample.

A.2.h. Leadership Experience

The purpose of this index, which was also adapted from the Leadership Experience subscale of the Lockheed-Harris Survey, was to measure the extent of leadership experiences the child had obtained in class. The index contained fourteen items of the type, "Have you

been the president of your class during this school year?" The possible range for this scale was 0-14, with the higher value representing more leadership experiences. The alpha coefficient for the pretest was .60 and the posttest was .63, computed on the Year One sample.

A.3. Student Sociometric Roster-Rating Instrument

The sociometric instrument completed by each child was a computer listing of each other child in his or her homeroom. In response to the question, "How would you feel about working with this person on a science class project," the student could circle "Would really like to work with," "Wouldn't mind working with," or "Would mind working with." Each student, therefore, rated each other student in his or her class. This instrument yielded two measures used in the reported analysis.

A.3.a. Ratings of Girls as Science Partners

This measure, derived from the student sociometric, was the mean rating, on a one to three scale, given by a student to the girls in his or her homeroom class in response to a question regarding how he or she would feel about working with each other child on a science class project. A higher mean score reflected a more positive rating.

A.3.b. Ratings of Boys as Science Partners

This measure, also derived from the student sociometric, was the mean rating given by a student to the boys in his or her homeroom class in response to the question described above.

A.4. Teacher Sociometric Roster Rating Instrument

Teachers completed roster ratings for each student in their classroom, as the teacher thought that child would respond. Two measures were derived.

A.4.a. Teacher's Perception of Students' Ratings of Girls

This measure, derived from the classroom sociometric completed by teachers, was the mean of the ratings teachers thought students would give to girls in their homeroom class. This measure was computed separately for boy and girls.

A.4.b. Teacher's Perception of Students' Ratings of Boys

This measure, again derived from the classroom sociometric completed by teachers, was the mean of the rating teachers thought students would give to boys in their homeroom class. This measure was computed separately for boys and girls.

A.5. Group Decision-Making Activity

The purpose of conducting the two group decision-making activities, "Lost on the Moon" and "Desert Survival," was to obtain a systematic measure of influence in mixed-sex groups. Since such groups rarely form naturally in elementary schools, the research team composed four-person groups of two boys and two girls, matched by ethnicity and grade, from ongoing classrooms. To ensure that all students from a classroom were able to participate in the tasks, other less matched groups were formed as needed, but data from these groups were not analyzed. Each student completed the task individually, ranking each of fifteen specified items on its importance for survival on the moon or in the desert. The groups were then brought together and cooperatively arrived at a group ranking of the items. Expert rankings of the items were available for comparison. These instruments gave rise to three measures.

A.5.a. Influence

This measure is the discrepancy between the individual student's ranking of a subset of four of the fifteen items and the rank given to each item by his or her group following a discussion. The smaller the discrepancy, the greater the influence.

A.5.b. Individual Performance

This measure, also derived from the "Lost on the Moon" and "Desert Survival" tasks, was the discrepancy between the individual student's ranking of four of the fifteen items and the rank given to each item by experts. The smaller the discrepancy, the better the performance.

A.5.c. Group Performance

This measure was the discrepancy between the group's ranking of four of the fifteen items and the rank given to each item by experts. The smaller the discrepancy, the better the performance.

B. Data Processing

In order to manage the extensive data files generated by this study, unique identification numbers were assigned to each student (in Northern 1001 to 3187 in Year One and 4,001 to 4,376 in Year Two; in Montevista, 5001 to 5678 in Year One and 6,001 to 6,631 in Year Two); teacher (01 to 16 in Northern; 51 to 64 in Montevista); and school (01 to 03 in Northern; 51 to school 56 in Montevista) immediately after the Student Descriptive Questionnaire (SDQ) data was collected. These numbers were used to identify all subsequently administered instruments and, in combination with the SDQ, to generate the teacher and student sociometric instruments. Figure 2.1 gives an overview of the data management process. Upon completion of each data collection activity, the data processing procedures

described in the following sections took place. This process is summarized in Figure 2.2.

B.1. Student Descriptive Questionnaire

The Student Descriptive Questionnaires, after being assigned unique identification numbers, were sent to the ETS keypunch department for key-tape entry and verification. Key entry subsequently supplied a standard label type nine track tape containing this data to the project programmer. The data on the tape was then transferred to a disk data set. The original SDQ's were returned to the project manager for retention.

B.2. Classroom Activities Questionnaire

The Classroom Activities Questionnaire (CAQ) was a 76-item multiple choice instrument for which a preprinted machine-scannable MCR answer sheet was provided. Student answer sheets from both sites were returned to the project manager in the ETS Princeton office for processing.

Standard ETS procedures were utilized to receive and scan these documents. Completed answer sheets were compiled and reviewed for complete student identification code information and gridding irregularities. A classroom code was added to the ID information before answer sheets were submitted to scanning. Any answer sheets rejected by scanning went to resolutions for hand-scoring and key entry of the correct data. Following standard procedure, a quality control method was established to assure that results of scanned answer sheets matched the actual responses. The answer sheets were then returned to the project manager, and a scanning tape containing this data was supplied to the project programmer. The data on the tape was transferred to a disk data set and reformatted in accordance with the project data file style (e.g., two-digit teacher ID, two-digit school ID, four-digit student ID, one-digit student gender ID, instrument code, instrument data). Information on which students completed the CAQ was recorded on master reports and cross-checked with the information of other measures administered on the same day. Further verification was achieved by consulting and updating the Site Master Computer file. Students who had moved were deleted; ID numbers were assigned to new students in the class. Only students who had completed both sections of both the pretest and the posttest were included in the subsequent analyses.

B.3. Student Sociometric Instrument

The student sociometric examined student ratings of classmates as work partners for a science project. Each student rated each other student as someone he or she "would really like to work with," "wouldn't mind working with," or "would mind working with." The student sociometric instruments from both sites were returned to the project manager in the ETS Princeton office for processing. An

instrument code was added to the responding student's unique identification number (consisting of a two-digit teacher ID, two-digit school ID, four-digit student ID, one-digit student gender ID) in the upper right-hand corner of the instrument. The actual rating for each student in the class by the respondent was coded as either a one, two, or three. These ratings were added to the corresponding student ID number to create a sociometric record for each respondent. A sample of the actual instrument, format and administration instructions is included in the Appendix. All ambiguous responses were resolved during this coding process. Missing responses were coded as nine; missing student respondents were coded as blank. Dummy records were inserted for absentees to preserve the classroom matrix. Students who had moved were deleted; ID numbers were assigned to new students in the class. At the same time, the site master computer file was updated to reflect these student population changes. Information on which students completed the student sociometric was also recored on master reports.

The hand-coded student sociometric instruments were then sent directly to the ETS keypunch department for key-tape entry and verification. Key entry subsequently supplied a standard label type nine track tape containing this data to the project programmer. The data on the tape was then transferred to a disk data set. The student sociometric instruments were returned to the project manager for retention.

An instrument data file was then established along with the appropriate data definition and task definition computer programs. This data was next matched up and merged with the SDQ file.

B.4. Teacher Sociometric Instrument

The teacher sociometric was almost identical to the student sociometric in format and asked teachers to indicate their perceptions of student's rating of each other student in the homeroom class in terms of their preference for working together on a science project. The teacher sociometric was, therefore, collected and processed in a manner similar to the processing used for the student sociometric.

B.5. Group Decision-Making Activity

Two equivalent group decision-making activities, "Lost on the Moon" for the pretest and "Desert Survival" for the posttest, were administered each year. For both instruments, students ranked 15 items in terms of their value for survival; this ranking was done twice, first as individuals and then in four-person groups composed of two boys and two girls matched as to ethnicity. Completed instruments were returned to the project manager in the ETS Princeton office for processing. All processing occurred at the classroom level. First, actual groups were checked against requisite group composition criteria including balanced gender, race, academic, and

classroom membership specifications. Groups not meeting these criterion were deleted. Next, individual rankings and the specific group ranking for each group were collated with careful attention to accuracy and, again, group composition criteria. Additional ID and code information was added to each respondent student's unique identification number to link the individual to group and the individual to other group members for planned analyses. Thus, the ID information in the upper right-hand corner of each student's individual document consisted of that student's four-digit ID, one-digit instrument code, two-digit group type indicator, and three-digit unique group number. During key tape entry the individual ranking and then group ranking was added to the above ID information for each record.

The ETS Key Entry Department supplied a standard label type nine track tape containing this data to the project programmer. The data on the tape was then transferred to a disk data set and a data file was established. As for all other project instruments, this data set file was then matched up and merged with the SDQ file. The student influence measure documents were returned to the project manager. Information on which students completed this measure was recorded on master reports and cross-verified in the Site Master Computer file.

C. Data Editing

As indicated in the previous section of this chapter, each of the pretest and posttest measures was coded, key entered, established as a data set file and merged with the SDQ file to form a unique data set. Techniques specific to each instrument data set were developed to insure accuracy and quality data. In general, however, the following data editing, error resolution, and data correction activities were performed for each measure:

Edit runs were performed to detect irregularities in identification codes, response categories and codings, format, record length, keypunch errors, and so forth. Sorting and merging each instrument data set with the SDQ file served quite effectively as the first identification code check. Errors were written to an error list with the appropriate error measure. Unmatched or duplicate ID numbers were easily checked against the Site Master Computer files, master reports, and the actual instrument when necessary. Very few ID code errors occurred in either student IDs, school codes, teacher codes, instrument IDs, or gender codes.

Record length and format for each student record was verified. The student and teacher sociometric matrices were carefully scanned in this process. Range checks on all item responses were made. A special computer program was written to identify out-of-field responses for the CAQ. These were resolved by checking the actual student document. Since the CAQ is composed of eight item scales, all items comprising the scales were recoded to dichotomous values.

All items that had more than two responses were recoded to only two responses through collapsing of categories. Some questions were recoded to reverse directionality so that all items in a scale had the same directionality for their values.

The student influence instruments were handled slightly differently due to the group nature of the measure. Extensive quality control was completed for these student influence measures prior to key tape entry. Upon return from key entry, the data was merged with the SDQ and checked so that the number of individuals having both an SDQ and an influence instrument was a multiple of four. The data was scanned for missing ID numbers and missing instruments. An edit program was run to confirm that all group and individual rankings summed to 120 (at they would if all items were ranked from 1 to 15). In checking the actual instruments, it was discovered that most problems were attributed to keypunchers' difficulty with children's handwriting. Corrections were made directly into the file by project staff.

References

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Table 2.1

CAQ Scale Reliabilities by Gender

Scale	Pretest Girls	Pretest Boys	Pretest Total	Posttest Girls	Posttest Boys	Posttest Total
STUCOMP	.62	.72	.76	.71	.73	.79
ATTLEAD	.48	.59	.74	.54	.57	.72
ATTCOOP	.49	.53	.50	.54	.59	.56
LEADEXP	.61	.60	.60	.61	.63	.63
COOPEXP	.45	.44	.45	.47	.49	.48
STEREO	.48	.51	.49	.54	.49	.51
SLFLEAD	.56	.58	.53	.62	.64	.63
PROBSOL	.61	.60	.61	.68	.67	.68

Table 2.2

CAQ Scale Reliabilities by Grade

Scale	Pretest			Posttest		
	Fourth Grade	Fifth Grade	Total	Fourth Grade	Fifth Grade	Total
STUCOMP	.77	.76	.76	.78	.81	.79
ATTLEAD	.77	.67	.74	.74	.70	.72
ATTCOOP	.47	.54	.50	.57	.56	.56
LEADEXP	.64	.54	.60	.64	.60	.63
COOPEXP	.46	.40	.45	.46	.50	.48
STEREO	.52	.44	.49	.52	.49	.51
SLFLEAD	.48	.65	.53	.56	.69	.63
PROBSOL	.57	.63	.61	.65	.69	.68

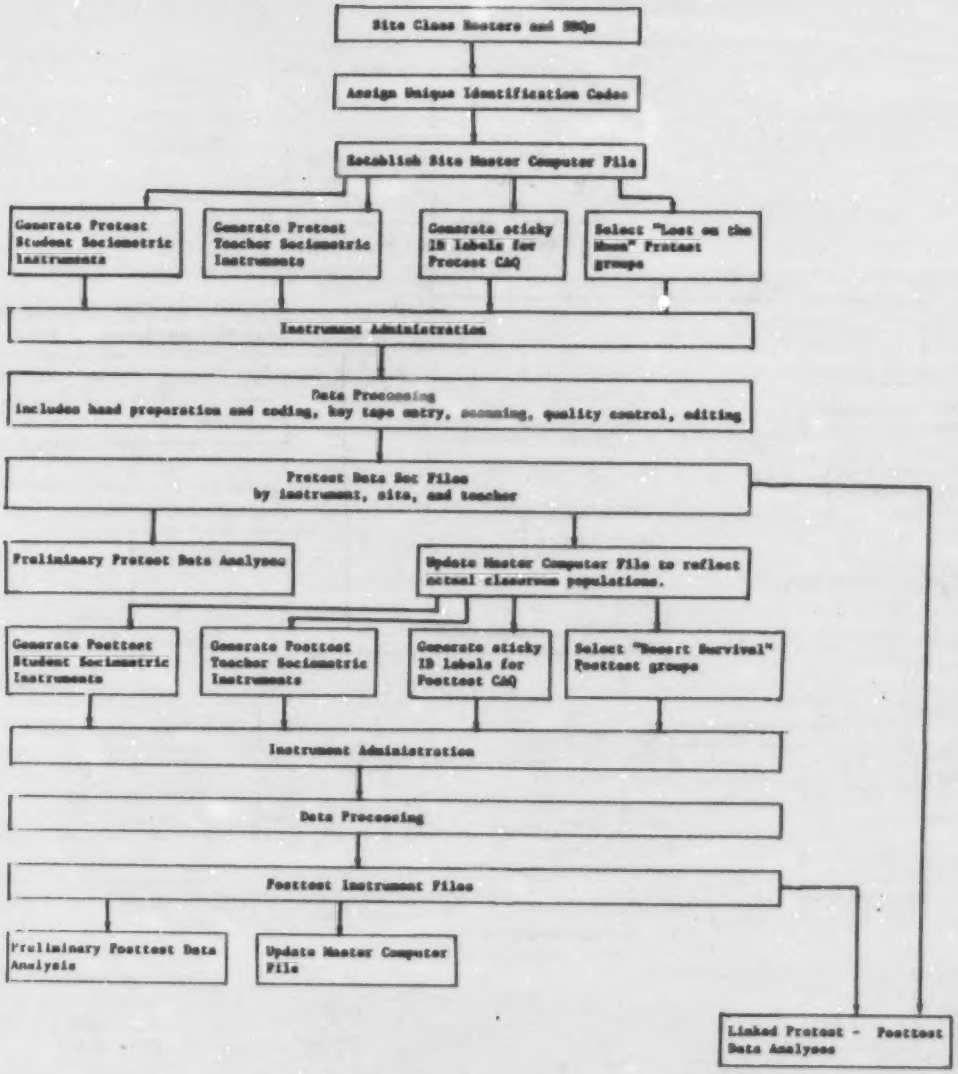
Site Class Rosters and HHQs
Assign Unique Identification Codes
Establish Site Master Computer File
Generate Pretest Student Sociometric Instruments
Generate Pretest Teacher Sociometric Instruments
Generate sticky ID Labels for Pretest CAQ
Select "Lost on the Moon" Pretest groups
Instrument Administration
Data Processing
includes hand preparation and coding, key tape entry, scanning, quality control, editing
Pretest Data Set Files
by instrument, site, and teacher
Preliminary Pretest Data Analyses
Update Master Computer File to reflect actual classroom populations.
Generate Posttest Student Sociometric Instruments
Generate Posttest Teacher Sociometric Instruments
Generate sticky ID Labels for Posttest CAQ
Select "Desert Survival" Posttest groups
Instrument Administration
Data Processing
Posttest Instrument Files
Preliminary Posttest Data Analysis
Update Master Computer File
Linked Pretest - Posttest Data Analyses

Figure 2.1

Data Management Process

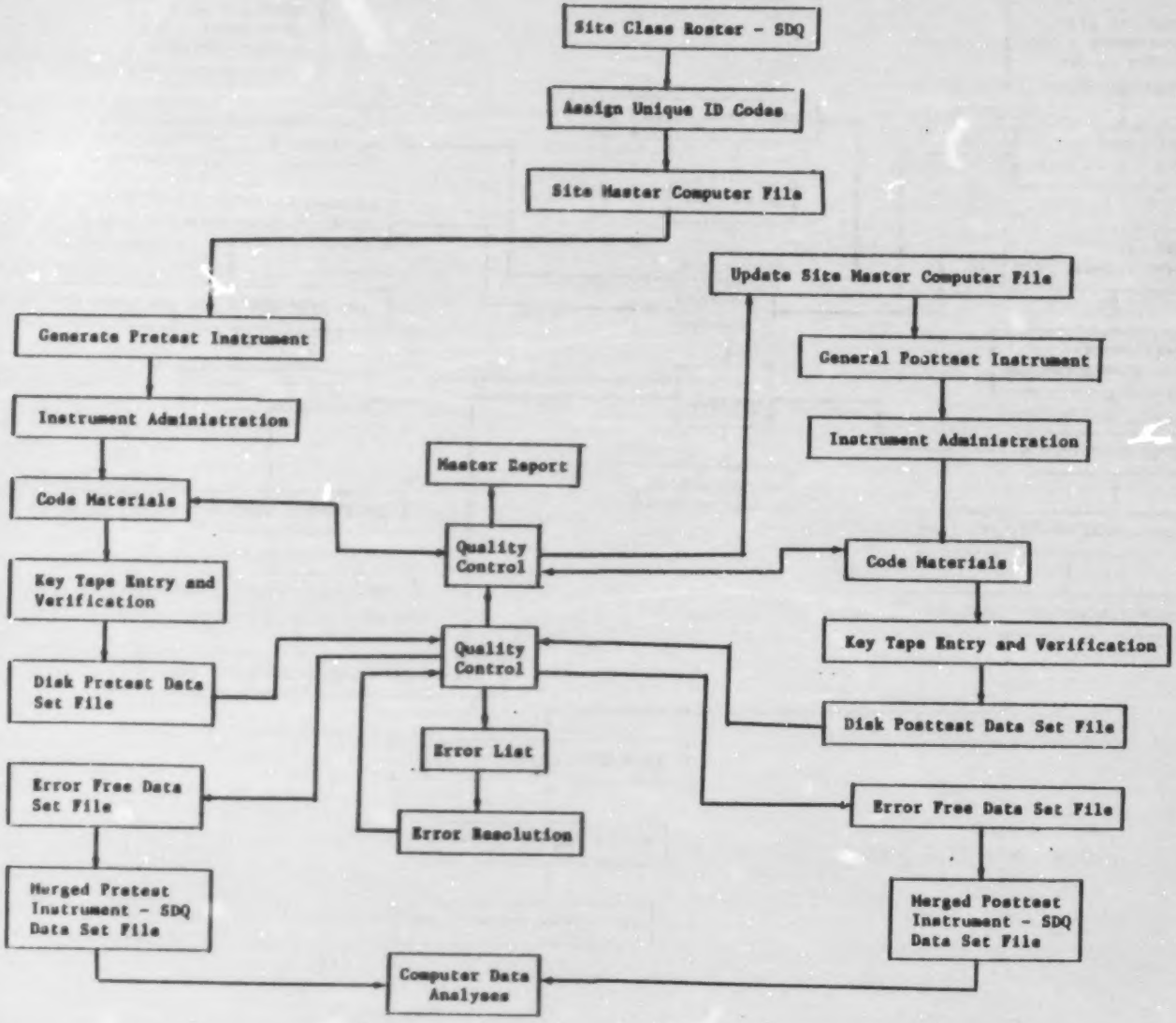

Figure 2.2

Data Processing Procedures

CHAPTER III

Gender Differences in Teacher-Student Interaction (Secondary Analysis)

A. Background and Overview

The purpose of Study II was to investigate a number of questions concerning sex differences in classroom interaction which would guide and inform the collection and analysis of the observation data for Study I. A large, well-documented data base which contained APPLE observation scores in conjunction with attitude and achievement scores for a heterogeneous sample of fifth-grade classrooms was available from an earlier study of teacher effectiveness conducted by Educational Testing Service for the National Institute of Education (McDonald & Elias, 1976). The original analysis of these data revealed that certain patterns of teacher behavior were significantly related to student learning but that no single teaching behavior was significantly correlated with learning in both reading and mathematics at both the second and fifth grades. With the exception of Lockheed's (1976) study concerning teacher expectations, and a study just completed investigating the effects of cognitive style (Stone, 1981), this rich data base has not been utilized to investigate sex differences in learning or teacher-student interaction. The specific questions addressed in the present study were:

(1) Do teachers interact differently with fifth-grade boys than fifth-grade girls? Are these differences consistent across teachers?

(2) Are differences in interaction related to the content being taught? Are gender differences in interaction similar in reading and mathematics classes?

(3) Are gender differences in interaction related to changes in performance on achievement or attitude measures?

(4) What patterns of interaction are related to achievement gains in reading and mathematics? Are these patterns similar for boys and girls?

A.1. Sample

The BTES data base contained test and observation scores for 51 fifth-grade teachers and 300 of their students who were tested in the fall and in the spring and observed during the winter. Teachers were volunteers from urban, suburban, and rural school districts in California. Each had a minimum of three years teaching experience. Six target students were selected to be representative of each classroom's ability and socioeconomic levels and ethnic/racial composition. All students who had a minimum of five observation records and test score data were included in the present study.

Two hundred and six students from 42 different classes met the criteria for inclusion. The sample contained approximately even numbers of boys (N=98) and girls (N=107). Approximately one-third of the students fell into each of the three socioeconomic categories as rated by their teachers. The sample was 12% Black, 22% Mexican, 10% Asian or Oriental, 50% White, and 6% from other racial/ethnic groups. There were no significant differences in socioeconomic level or ethnic/racial composition between the boys and girls in the sample.

A.2. Achievement, Attitude and Expectation Measures

General intelligence was determined by the Short Form Test of Academic Aptitude (1970) which was given in the fall. Cognitive style was measured by the Children's Group Embedded Figures Test, a test of field-independence adapted for group administration (Stone, 1976) from the Children's Embedded Figures Test (Karp & Konstadt, 1963). This test was given in the spring. Both general intelligence and cognitive style are assumed to be aptitudes or traits which do not change appreciably over the course of the school year.

Student achievement was determined by scores on the California Achievement Tests in reading comprehension, mathematics concepts and mathematics computation (1970), and Reading Achievement, Reading Application and Mathematics Application tests (Educational Testing Service, 1973) which were given in the fall and again in the spring. Achievement test scores were converted into percent correct scores, and two "Total" scores were created by summing the three reading scores and three mathematics scores.

Student attitudes were measured by the Reading Attitude and Mathematics Attitude measures (Eduational Testing Service, 1973), and pupil expectations as to what level of reading text or mathematical problem they could successfully complete were measured by the Pupil Survey Instrument (Educational Testing Service, 1973). All tests were administered according to published instructions by specially trained substitute teachers. Reliability estimates ranged from the mid 70's for the Attitude tests to the low 90's for the California Achievement Tests.

A.3. Observation System

APPLE (Anecdotal Processing to Promote the Learning Experience) is a natural language observation system in which the observer records "events" as they occur in the classroom (Lambert, Hartsough, Converse, & Converse, 1971). Each event includes the child's activity, instructional context, teacher activity, and teacher response. It describes what the child was observed to do, the antecedent conditions producing the observed behavior, the teacher response to the child, if any, and the outcomes of the behavior. Events are recorded as they occur, and thus the number of events will depend on the amount of activity in the classroom; however, at

least one event is recorded for each target student during each five minute period even if the activity remains constant.

The event descriptions are later coded according to the APPLE Lexicon. The Lexicon was developed using some 25,000 naturalistic observations in 75 different classrooms and is open-ended, allowing for the addition of categories as needed.

Observers were selected on the basis of prior experience in classroom settings and no particular bias with respect to specific reading or mathematics instructional methods. They were trained by Drs. Lambert and Hartsough in classrooms similar to the ones they would be observing. Observations were made according to a prearranged schedule, and observers contacted teachers the day before to remind them. Interobserver reliability estimates ranged from the low .70's to the mid 80's (Lambert & Hartsough, 1976).

All observation sheets were coded by three graduate research assistants who were thoroughly familiar with the Lexicon. Discrepancies in coding were resolved through discussion. Each of the behaviors with a frequency greater than 100 (across all students and teachers) was given a unique code number, while all other behaviors were coded as 99. Six instructional contexts, 15 teacher activities, 17 pupil behaviors, and 12 teacher responses were identified. Lexicon definitions for these frequently occurring behaviors are given in Appendix 3A. It is this data base that was available for analysis. The original study analyzed these variables across all teachers and across all students. However, since the data was collected and coded as interaction data, it was possible to conduct other kinds of analysis which would examine the teacher-student interaction patterns for particular groups of students.

B. Procedure

The present investigation was conducted in two phases. During the first phase APPLE observation data was analyzed for sex differences and the results examined to answer questions concerning gender differences in teacher-student interaction, consistency of interaction differences across teachers, and the relation of differential interaction with boys and girls to the subject matter being taught. The second phase concerned relating teacher-student interaction to student achievement, attitude and expectation changes.

B.1. Determination of Gender Differences

The means, standard deviations, and *t*-tests for sex-differences were computed for each of the aptitude, attitude, achievement, and expectation measures. Difference scores between fall and spring scores were calculated separately for boys and girls and *t*-tests for sex-differences performed.

Means and standard deviations were calculated for the number of observation records in reading and mathematics separately for boys and girls and t-tests performed to determine differences.

Means and standard deviations were computed for the total sample and for boys and girls separately for the 50 APPLE observation variables (see Appendix 3B). Since many frequencies were low and not normally distributed, a dichotomous (0 or 1) scoring procedure was adopted. Observation scores were recoded, and chi-square analyses were performed to determine differences between boys and girls on the individual variables separately for reading and mathematics. Contingency tables were calculated for variable pairs, and chi-square analyses performed where indicated. Since the chi-square test is a relatively conservative test of differences, the significance level was set at $p = .10$.

Correlations among the variables were calculated separately for each group and each subject matter and examined for similarities and differences between boys and girls.

The consistency of identified gender differences in teacher-student interaction was examined by forming a proportion of the number of students with positive scores over the number of teachers involved and comparing it to the proportion of students and their teachers with negative scores.

The number of students with positive observation scores on each of the variables were compared for reading and mathematics to determine if gender differences were related to the subject matter being taught or determined by the instructional contexts which typified each subject.

B.2. Relation of Teacher-Student Interaction to Student Measures

The relation of achievement, attitude, and expectation measures was determined through correlation and regression analysis. The expectation measures were found to be unsuited for further analysis since the fall and spring expectation scores were correlated as highly with the fall-spring attitude scores as they were with each other, and added nothing to the amount of variance explained in the residual gain scores in either reading or mathematics.

To determine the relation of the observation variables to changes in achievement and attitude scores, stepwise multiple regression was performed separately for boys and girls in each subject matter. With the spring score the dependent variable, the fall achievement or attitude score was stepped in first; then the student characteristics including field-independence (as measured by the Children's Group Embedded Figures Test), SES level, and ethnicity were allowed to enter according to the amount of variance they explained; and finally the individual observation variables were entered.

C. Results

C.1. Identification of Gender Differences

C.1.a. Outcome Measures

Means, standard deviations, and t-tests for sex differences on the aptitude, achievement, attitude, and expectation measures are given in Table 3.1. There were no significant ($p \leq .05$) differences on any of the measures. There were also no significant sex differences for the spring-fall difference scores on any of the measures. There were no significant differences in the number of reading and mathematics observation records between boys and girls, although boys tended to have more records in reading.

C.1.b. Context and Teacher Activity

The number of boys and girls with positive scores (≥ 1) on the instructional context and teacher activity APPLE observation variables are listed in Table 3.2 with significant ($p \leq .10$) chi-squares. In reading the most common instructional context was independent work in groups (IC3), followed by teacher-led groups (IC6), and everyone in the class working independently (IC2). This pattern describes the typical occurrence where the teacher, while working with one group, assigns the remaining students to work either in small groups or independently. The most common instructional contexts in mathematics classes were teacher working with the whole class (IC5), all students working independently (IC2), and independent work in groups (IC3). There were no significant differences in how teachers assigned boys and girls to any of the classroom contexts in either subject matter.

The most common teacher activity during reading classes was working with an individual student (TA15), followed by asking questions (TA3), circulating (TA7), checking (TA6), and academic organization (TA1). There were no significant sex differences in these activities. However, teachers were significantly more likely to help (TA10) and work at the board (TA5) with boys than girls during reading instruction.

The most common teacher activities during mathematics classes were similar to those during reading. Most frequent was working with individual students (TA15), followed by helping (TA10), circulating (TA7), checking work (TA6), asking questions (TA3), and explaining (TA9). Only one significant difference was found. Teachers were more apt to help boys than girls during mathematics as well as during reading.

C.1.c. Pupil Behavior and Teacher Response

The numbers of boys and girls with positive (≥ 1) observation scores for pupil behavior and teacher responses are listed in Table 3.3. In reading, the most frequent pupil behavior was, by far, positive engagement (PB4), followed by positive attentiveness (PB2),

positive academic performance (PB1), positive work habits (PB7), and negative inattention (PB10). Out of the seventeen pupil behaviors, significant differences were found for only two: boys were higher on negative inattention (PB10) and neutral engagement (PB12).

The most common teacher response in reading was "none" (TR7), followed by positive feedback (TR8), redirect (TR12), explain (TR1), and recognize (TR11). Two responses were more frequently given to boys: explanations (TR1) and redirection (TR12).

In mathematics the most frequent pupil behavior was again positive engagement (PB4), followed by positive number concepts (PB15), positive work habits (PB7), and then negative inattention (PB9). Six of the 17 pupil behaviors were significantly different for boys and girls. Girls were higher on positive attentiveness (PB2), while boys were higher on positive participation (PB5). Boys were also higher on negative inattention (PB9), neutral inattention (PB13), negative number concepts (PB16), and neutral number concepts (PB17).

The most common teacher response in mathematics classes was again "none" (TR7), followed by explanation (TR1), positive feedback (TR8), ignore (TR4), recognize (TR11), and redirect (TR12). Two responses were significantly different for boys and girls: teachers tended to redirect (TR12) and give negative feedback (TR6) more to boys than girls.

C.1.d. Interaction Chains

Results of significant ($p \leq .10$) chi-square tests on paired variables for reading are given in Table 3.4. When students are working independently in a class or group context, teachers provide boys with more help (IC2:TA10), checking of work (IC3:TA6), discussion (IC3:TA8), positive feedback (IC3:TR8), and redirection (IC3:TR12), while with the teacher in the whole class situation boys receive more explanations (IC5:TR1). There are significant differences in behavior in different contexts with boys exhibiting more negative and neutral behavior (IC2:PB9, IC3:PB12, IC6:PB20) and girls more positive behavior (IC6:PB15). Similarly, boys were higher on negative inattention during discussions (TA8:PB9), while girls were higher on positive attention (TA8:PB2). Girls also showed more positive engagement when teachers were circulating (TA7:PB4) and helping (TA10:PB4) students.

Teachers responded differently to boys than girls with respect to giving more explanations in response to positive academic performance (PB1:TR1) and more praise in response to positive reading comprehension (PB17:TR9). With respect to negative talking during reading classes, teachers were more likely not to respond to girls than to boys (PB10:TR7).

The results for significant ($p \leq .10$) chi-square tests for paired variables in mathematics are given in Table 3.5. In the independent-class context teachers were again more likely to give boys help (IC2:TA10). In both independent-class and teacher-class contexts, boys were higher than girls on all kinds of number concepts and math skills (IC2:PB15, IC2:PB21, IC5:PB17, IC5:PB21) and also on negative inattention and behavior (IC2:PB9), IC5:PB9, IC5:PB19). In the teacher-class and teacher-group contexts girls were higher on positive attention (IC5:PB2, IC6:PB2). Boys received more redirection and negative feedback in whole-class situations (IC2:TR12, IC5:TR6). When the teacher was circulating or helping individuals, boys were higher on positive and neutral number concepts (TA6:PB15, TA10,PB17). Girls were higher on positive attention when the teacher was working with them (TA15:PB2). Teachers were more likely to redirect the negative conduct of girls than that of boys (PB8:TR12).

For the 17 significantly different teacher-student interaction pairs in reading, boys scored higher on 12. For the 16 significantly different interaction pairs in mathematics, boys scored higher on 12.

Correlation tables for pupil behavior and teacher responses in reading were computed separately for boys and girls. Table 3.6 presents the significant correlations for reading classes. A number of differences in the teachers' responses to the same behavior on the part of boys and girls are apparent. In only a few instances are the significant correlations the same for both boys and girls. One qualitative difference is that for exhibiting either positive behavior or reading skills girls are more likely to receive positive feedback, whereas boys are more likely to receive praise.

Table 3.7 presents similar correlation results for boys and girls in mathematics classes. Again in only a few cases are the significant correlations the same for boys and girls. In response to positive behavior and mathematics skills girls are as likely to have the teacher ignore them or move on to the next student when the same behavior from boys is responded to with positive feedback or praise.

Each of the 6 individual and 17 paired variables in reading and the 9 individual and 16 paired variables in mathematics that were identified as significantly different for boys and girls was examined for consistency across teachers. The proportion of students to teachers with positive observation scores was compared to the proportion of students to teachers with negative scores. In each instance these proportions were similar, indicating that the students with significantly higher scores were distributed relatively evenly over the various classrooms. Particular attention was paid to those cases where fewer than fifteen students of either sex were involved. In each case the ratio approached one for the affected group as the number of students decreased; thus differences were attributable to more rather than fewer teachers.

C.1.e. Comparisons between Reading and Mathematics

The positive observation scores (see Tables 3.2 and 3.3) were compared for reading and mathematics to determine if gender differences were similar for the two subject matters or if differences were related to the context and content being taught. Instructional contexts for the two subject matters differed significantly. In reading the most frequent context was independent work in small groups, with independent seat work and teacher working with small group both somewhat lower in frequency. The teacher working with the whole class was much less frequent. In mathematics, teaching the class as a whole, independent seat work, and independent work in groups all had similar frequencies. These patterns are typical of reading and mathematics instruction in elementary school classrooms.

Teaching activities within these contexts differed on certain dimensions. In both reading and mathematics, the most frequent teacher activity was working with an individual student. Teachers were also similar in the relative amounts of asking, checking and circulating they did. However, teachers were more apt to engage in discussion, listening, and sustained question and answer interaction with students in reading and to work at the board, explain, and help individual students when teaching mathematics. Since these observations are on the same teachers teaching the same children, we may assume that these differences reflect the influence of the subject matter being taught. Only one teacher activity was found to be different for boys and girls across subject matters: teachers provided boys with more individual help than girls in both reading and mathematics classes.

The most frequent pupil behavior in both reading and mathematics classes was positive engagement with the lesson materials. Students, however, were more likely to exhibit neutral engagement and conduct in reading and more positive work habits in mathematics. Only one behavior differentiated boys and girls across subject matters. In both reading and mathematics classes boys exhibited significantly more negative inattention. Boys were also significantly more active than girls in mathematics classes in both neutral and negative skills and behavior.

The most frequent teacher response in both reading and mathematics was "none." The teacher response which differentiated boys from girls across subject matters was that of redirection, as would be expected given boys' greater amount of neutral and negative behavior in both types of classes. Teachers were much more likely to "move on" or question a response in reading classes and more likely to offer an explanation in mathematics classes.

In general the significant differences on paired observation variables (see Table 3.4 and 3.5) simply reflected those differences found between the two subjects for the individual variables. Two

interesting exceptions were that in reading boys received more praise for positive reading comprehension than did girls and in mathematics girls received more redirection for negative conduct than did boys.

3.2. Relation of Teacher-Student Interaction to Achievement and Aptitude Measures

Results of the stepwise multiple regression analyses were more informative about the nature of the relationship between teacher-student interaction and these measures than they were about specific differences in those relationships between boys and girls.

In reading, the fall achievement score accounted for 78 percent of the variance in the spring achievement score for boys, but only 67 percent of that for girls. Field-independence (as measured by the CGEFT) was a significant predictor for boys, while ethnicity and SES were not. For girls, SES and ethnicity were significant predictors, but field-independence was not. Individual observation variables stepped in for boys until $R^2 = .89$ and for girls until $R^2 = .82$. However, the signs associated with the particular behaviors indicated that teachers interacted with high achievers in one way and low achievers in another. For boys, 5 of the 9 best behavioral predictors, both positive and negative, were teacher responses. For girls, 6 of the 9 best predictors were teacher activities.

In mathematics, the fall achievement score accounted for 82 percent of the variance in the spring achievement score for boys, but only 74 percent for girls. Once again, field-independence was a significant predictor for boys, but not for girls, while ethnicity and SES were significant predictors for girls, but not for boys. Individual observation variables stepped in for boys until $R^2 = .89$ and for girls until $R^2 = .85$. Again the signs associated with the predictors indicated that literal interpretation of the regression results was not conceptually viable. For boys, 6 of the 7 significant predictors were pupil behaviors or teacher responses, while for girls, 5 of the 9 significant predictors were instructional context or teacher activity variables.

Regression analysis was employed to examine the relationship between residual gain scores in reading and mathematics with student attitude and expectation scores. In reading, neither attitude nor expectation scores were significant predictors for boys; however, the spring attitude score was a significant predictor for girls. In mathematics, fall attitude score was a significant predictor for boys, and both fall and spring scores were significant predictors for girls. Expectation scores did not make a significant contribution to the variance explained by the attitude scores alone for either boys or girls in either subject matter and were not included in subsequent analyses.

Multiple stepwise regression was applied to the observation variables with the spring attitude score as the dependent variable. In reading, the fall attitude score accounted for 42 percent of the variance in the spring attitude score for boys, and 40 percent of that for girls. Field-independence was a significant predictor for boys; high SES was a significant predictor for girls. Once again the individual variables could not be meaningfully interpreted, although for attitude change, significant predictors included as many pupil behavior and teacher response variables for girls as for boys.

In mathematics, the fall attitude score accounted for 42 percent of the variance in the spring attitude score for boys, but only 22 percent of that for girls. For both boys and girls field-independence was a positive predictor, and neither SES level nor ethnicity were significant predictors. Individuals' variables stepped in to bring the R^2 for boys to .67 and for girls to .53. However, the predictors did not lend themselves to meaningful interpretation.

D. Discussion

The purpose of Study II was: (1) to investigate a number of questions concerning gender differences in teacher-student interaction and their relationship to changes in student achievement, attitude, and expectations, and (2) to apply the findings and insights gained during the analysis of the BTES data base to the ongoing refinement of the design and analysis of Study I. A summary and interpretation of the findings for each of the research questions is given below, followed by a discussion of how the results of Study II can be used in the continuation of the SECI project.

D.1. Gender Differences in Teacher-Student Interaction

D.1.a. Summary

Do fifth-grade teachers interact differently with boys and girls? Are these differences consistent across teachers? Teachers placed boys and girls in the same instructional contexts (which differed for reading and mathematics classes), and with few exceptions exposed them to the same teaching activities. However, in both reading and mathematics, across all contexts, teachers provided boys with more individual help than girls.

The pattern for pupil behavior and teacher responses differed considerably for reading and mathematics. Across all contexts in reading boys exhibited more negative inattention and neutral engagement. Teachers responded with more explanations and redirection, also both to boys. In mathematics, across contexts, girls were higher on positive attentiveness while boys were higher on positive participation. Boys were also higher on negative and

neutral inattention and negative neutral number concepts. Teachers responded with more redirection and negative feedback to boys.

A number of significant gender differences in teacher-student interaction within context were identified. In reading, when students were working independently, teachers were more likely to help with, check, and discuss boys' work than girls', and to provide boys with more positive feedback and redirection. In response to reading performance boys were more apt to receive explanations and praise. Girls, on the other hand, were generally more attentive and better behaved in all reading contexts.

In mathematics, when students were working independently, teachers provided boys with more help, redirection, and negative feedback. In both the independent and teacher-led contexts boys exhibited much more negative and neutral behavior as well as more math skill of all kinds. However, it was girls who received more redirection for negative conduct.

All 23 significant differences in reading were higher for boys; 20 of the 25 significant differences in mathematics were higher for boys. Each of these differences was relatively consistent across teachers, i.e., teacher-student interaction in just a few classes did not cause the differences.

An examination of the significant correlations for boys and girls revealed different patterns of teacher responses to the same pupil behaviors. In particular, in response to positive behavior or reading skills girls are more likely to receive <u>positive feedback</u> while boys are more likely to receive <u>praise</u>. In mathematics, in response to positive behavior or mathematics skills girls were as likely to have the teacher ignore them or move on to the next student as boys were to receive positive feedback or praise for the same behaviors.

D.1.b. <u>Interpretation</u>

It is clear from this analysis that boys were more salient members of these classrooms and received more attention of all kinds for their negative behavior and higher <u>quality</u> feedback for their positive behavior. Girls, on the other hand, were better behaved in general, and received little positive feedback for it. In fact, there is a tendency for teachers to respond more negatively to girls' off-task behavior simply because it is less common. This may be the counterpart to giving higher quality feedback to boys for positive performance simply because it is less common. Are girls in elementary school classrooms forced into a more restricted range of behaviors by such teacher responses?

D.2. Relation of Gender Differences to Content Taught

D.2.a. Summary

Are differences in teacher-student interaction similar for reading and mathematics classes? Teachers were more likely to provide individual help to boys in both reading and mathematics. Boys were more likely than girls to exhibit negative and neutral behavior in reading, and teachers responded by providing them with more explanations and redirections. Boys were much more likely than girls to engage in negative and neutral behavior in mathematics classes, and teachers responded with more negative feedback and redirection. Girls were better behaved than boys in both types of classes; boys were better behaved in reading than mathematics. There was also a quality difference in the positive behavior in mathematics; girls were higher in positive attention, while boys were higher in positive participation. Girls and boys were similar on these two variables in reading. Boys received more praise for positive reading comprehension. Girls received more redirection for negative conduct in mathematics.

D.2.b. Interpretation

Although previous research has indicated that teachers spend more time teaching elementary school girls reading and boys mathematics (Leinhardt, Seiwald, & Engel, 1979), these analyses indicate that teachers spend more time giving boys individual academic help in both subjects, in spite of the fact that boys and girls scored similarly on all the pre- and posttests. Apparently the nature of their behavior in the classroom rather than their ability elicits this kind of attention from the teacher. This is particularly clear in mathematics where their level of participation and demonstration of all kinds of math skills are greater. The relatively greater amount of neutral and negative behavior in mathematics than reading for boys may be due to the typical instructional contexts for these. In reading, teachers more frequently place children in small teacher-led groups as opposed to whole class teaching, and teacher proximity may dampen negative behavior.

D.3. Relation of Teacher-Student Interaction Differences to Achievement

D.3.a. Summary

What patterns of interaction are related to achievement gains in reading and mathematics? Are these patterns similar for boys and girls? Results of the regression analyses were more informative about the nature of gender differences in relation to teacher-student interaction and achievement gains than they were about the specific relation of individual variables to achievement gains. In both reading and mathematics, the fall score explained more of the variance of the spring score for boys than for girls. Field-independence was

a significant predictor of achievement for boys but not for girls, and SES level and ethnicity were significant predictors of achievement for girls but not for boys in both subject matters. The signs associated with the individual teacher-student predictor variables indicated that teachers interacted differently with high achieving and low achieving students. However, the type of variables which were significant predictors were different for boys and girls. In reading, the majority of the significant predictors for boys were teacher response variables, while for girls they were teacher activity variables. In mathematics, the majority of the significant predictors were pupil behavior and teacher response variables for boys and instructional context and teacher activity variables for girls.

D.3.b. Interpretation

Literal interpretation of the positive and negative predictors was not conceptually viable unless it was assumed that teachers interacted differently with students of differing ability. While such an assumption has some backing in the literature (Brophy, 1980), it was not a characteristic entered in these analyses.

The finding that different types of variables are significant predictors for boys and girls indicates that boys and girls perceive and react to different dimensions of the classroom environment. Girls appear to be more influenced by the instructional contexts and teacher activities which provide the general structure of the classroom; boys appear to be more influenced by their own behavior and the teacher responses to it. This concurs with the finding that field-independence is a significant predictor for boys but not for girls, and that the status characteristics of SES level and ethnic group were significant predictors for girls but not boys. The elementary school girls in this sample apparently accepted the "givens" of their various classrooms, while the boys took a more active role in shaping the classroom environment. Since there were no significant differences in overall learning, should we assume that these two different styles are equally effective?

D.4. Relation of Teacher-Student Interaction Differences to Change in Attitude and Expectation

D.4.a. Summary

What is the relation of attitude and expectation to achievement gains? What patterns of interactions are related to changes in attitude and expectation? Regression analysis indicated that the relation of attitude to achievement gains differed for the two subject matters. In reading, attitude was a significant predictor for girls but not for boys. In mathematics, attitude was a significant predictor for both. Expectation scores were highly correlated with attitude and did not significantly improve the prediction of achievement gains for either boys or girls in either subject.

Results of the regression analysis relating teacher-student interaction to changes in attitude indicated both subject matter and sex differences. For reading the fall score was an equally good predictor of the spring score for both boys and girls. Once again field-independence was a significant predictor for boys, while SES was significant for girls. Pupil behavior variables and teacher response variables made up the majority of the significant predictors for both boys and girls, but the individual variables did not lend themselves to meaningful interpretation.

In mathematics, the fall attitude score accounted for nearly twice as much variance for boys as it did for girls. Field-independence was a significant predictor of spring attitude for both, while SES was not. The majority of significant predictors for both boys and girls were pupil behavior and teacher response variables, but the individual variables were not meaningfully interpretable.

D.4.b. Interpretation

Attitude appears to be more important to learning for girls than for boys and also more influenced by classroom interaction. If, as indicated by the regression analysis, this is even more true for mathematics than for reading, then these elementary school girls are in real jeopardy. Our earlier analysis of gender differences in interaction in mathematics classes indicated that boys were much more active participants and received a disproportionate amount of teacher positive feedback and praise when compared to the girls.

E. Implications for 1980-82 Study

Two major implications for the continuation of the SECI study emerged from these findings. The first concerns what to look at in classrooms to capture gender differences. The second concerns ways in which the APPLE observation data can be analyzed to yield the best information.

E.1. Focus of Observation

It is clear from the reanalysis of the BTES data, that boys and girls get reinforced and reprimanded for different types of behaviors in classrooms. Girls are overall much more likely to behave positively than boys, and as a result they get less positive reinforcement for good behavior and more negative reinforcement for poor behavior. Boys, on the other hand, are generally more poorly behaved and are likely to be off-task. As a result, they get more positive reinforcement for good behavior and less reinforcement for poor behavior. The parameters of "acceptable behavior" for boys and girls in classrooms appear to be quite different.

There was some evidence that teachers were more apt to initiate individual academic contacts with boys than with girls. This may be

a strategy for getting or keeping the boys on task, but it also results in more interaction between teachers and students. There was also some evidence that girls were not given as specific or high quality reinforcement for academic skills as were boys, especially in mathematics. In many cases, the differences were subtle ones, such as between positive feedback versus praise.

The 1980-82 study should therefore pay particular attention to: (1) the different kinds of behavior which are treated as "acceptable" for boys and girls, (2) the apparent reasons for teachers initiating interaction with boys and girls, (3) the type of feedback (or lack of it) which is given in response to similar behaviors from boys and girls.

E.2. Analyses of APPLE Data

The regression analyses of individual APPLE variables on student achievement scores indicated that teachers apparently interact differently with low achieving and high achieving students, e.g., giving lower ability students more positive feedback and tolerating more off-task behavior from higher ability students. This resulted in positive feedback being a negative predictor of achievement, while negative inattention was a positive predictor. Therefore some indicator of general ability level should be incorporated into future analyses of APPLE data.

One of the most interesting findings of the first study was that the types of variables related to achievement were different for boys and girls, with girls being more influenced by instructional contexts and teacher activities, and boys being more influenced by their own behavior and the teachers' response to it. A specific hypothesis concerning these different types of variables should be tested with the APPLE data, collected for the 1980-82 study.

Finally, many of the individual and paired variables were different for boys and girls, but the differences did not reach significance. This suggests that conceptual groupings of certain behaviors and responses would yield better information concerning the actual differences experienced by boys and girls in classrooms.

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Table 3.1

Test Score Means and Standard Deviations with
t-Tests for Sex Differences

Test	Boys		Girls		t-Value
	$\bar{x}$	SD	$\bar{x}$	SD	
CGEFT	42.13	22.54	40.34	20.80	.58
SFTAA	50.95	18.88	48.41	18.34	.96
READING-F					
Comprehension	58.39	16.78	57.86	15.63	.23
Achievement	53.32	23.51	54.18	21.37	-.27
Application	77.69	20.02	73.48	17.26	-.30
Attitude	55.88	22.21	57.54	19.64	-.56
Expectation	71.03	14.69	69.37	15.71	.78
READING-S					
Comprehension	61.61	18.34	59.63	18.75	.75
Achievement	54.34	24.55	55.20	23.28	-.25
Application	58.99	25.24	63.65	21.62	-1.40
Attitude	53.20	23.64	53.54	24.83	-.10
Expectation	65.54	21.40	60.96	22.56	1.49
MATHEMATICS-F					
Concepts	55.22	14.96	54.24	12.76	.51
Computation	42.38	15.35	43.35	12.92	-.48
Application	56.32	21.56	54.55	19.39	.60
Attitude	58.92	23.21	53.84	22.51	1.57
Expectation	61.69	23.50	61.53	19.84	.05
MATHEMATICS-S					
Concepts	56.44	16.01	56.88	15.65	-.20
Computation	43.81	16.80	46.13	13.92	-1.06
Application	51.45	26.36	52.55	20.81	-.33
Attitude	56.73	27.76	49.88	26.79	1.75
Expectation	58.28	27.01	60.95	25.46	-.72

$p \leq .05$

Table 3.2

Sex Differences in Instructional Context and Teacher Activity in Reading and Mathmatics Classes

	Reading			Mathmatics		
	Boys (N=98)	Girls (N=107)	χ^2 ($p \leq .10$)	Boys (N=97)	Girls (N=105)	χ^2 ($p \leq .10$)
IC 1	6	3		0	0	
IC 2	51	61		63	60	
IC 3	80	87		57	63	
IC 4	14	16		5	4	
IC 5	48	41		60	67	
IC 6	52	62		39	41	
TA 1	29	27		21	22	
TA 2	9	10		17	12	
TA 3	39	37		33	34	
TA 4	23	17		18	19	
TA 5	11	5	3.05	15	19	
TA 6	29	32		37	38	
TA 7	30	32		40	37	
TA 8	28	23		6	12	
TA 9	14	15		30	30	
TA 10	31	20	4.58	47	38	3.11
TA 11	28	26		23	24	
TA 12	23	16		1	1	
TA 13	23	31		9	11	
TA 14	15	16		16	13	
TA 15	82	89		69	77	

Table 3.3

Sex Differences in Pupil Behavior and Teacher Responses in Reading and Mathmatics Classes

	Reading			Mathmatics		
	Boys (N=98)	Girls (N=107)	χ^2 ($p \leq .10$)	Boys (N=97)	Girls (N=105)	χ^2 ($p \leq .10$)
PB 1	35	39		4	5	
PB 2	38	50		29	46	4.18
PB 3	21	28		24	20	
PB 4	85	96		76	80	
PB 5	16	14		15	8	3.08
PB 6	17	21		14	23	
PB 7	35	35		41	50	
PB 8	17	17		15	14	
PB 9	45	33	4.93	51	30	12.10
PB 10	32	33		33	28	
PB 11	24	25		14	17	
PB 12	28	20	2.78	11	8	
PB 13	21	16		19	11	3.31
PB 14	30	27		32	34	
PB 15	23	34		59	57	
PB 16-R	8	10				
PB 16-M				23	12	5.31
PB 17-R	14	15				
PB 17-M				28	13	8.47
TR 1	32	23	3.24	27	36	
TR 2	12	10		13	8	
TR 3	17	20		21	15	
TR 4	21	20		23	21	
TR 5	16	16		3	6	
TR 6	4	1		6	1	2.71
TR 7	96	106		95	104	
TR 8	50	47		30	33	
TR 9	17	17		15	10	
TR 10	14	12		5	8	
TR 11	21	25		22	22	
TR 12	33	25	2.68	29	14	8.26

Table 3.4

Sex Differences on Paired Observation Variables in Reading Classes

Notation	Paired Variables	Group	χ^2 ($p \leq .10$)
IC 2: TA 10	Independent-class: Helping	Boys	4.45
IC 3: TA 6	Independent-group: Checking	Boys	3.39
IC 3: TA 8	Independent-group: Discuss	Boys	5.33
IC 2: PB 9	Independent-class: Negative inattention	Boys	2.74
IC 3: PB 12	Independent-group: Neutral engagement	Boys	4.07
IC 6: PB 15	Teacher-group: Positive oral reading	Girls	3.20
IC 6: PB 20	Teacher-group: Neutral behavior	Boys	4.60
IC 3: TR 8	Independent-group: Positive feedback	Boys	4.08
IC 3: TR 12	Independent-group: Redirect	Boys	2.72
IC 5: TR 1	Teacher-class: Explain	Boys	3.70
TA 7: PB 4	Circulate: Positive engagement	Girls	3.28
TA 8: PB 2	Discuss: Positive attention	Girls	2.85
TA 8: PB 9	Discuss: Negative inattention	Boys	4.76
TA 10: PB 4	Helping: Positive engagement	Girls	3.30
PB 1: TR 1	Positive academic performance: Explain	Boys	2.74
PB 10: TR 7	Negative talking: No response	Girls	4.37
PB 17: TR 9	Positive reading comprehension: Praise	Boys	2.80

Note: IC = Instructional Context
TA = Teacher Activity
PB = Pupil Behavior
TR = Teacher Response

Table 3.5

Sex Differences on Paired Observation Variables
in Mathmatics Classes

Notation	Paired Variables	Group	χ^2 ($p \leq .10$)
IC 2: TA 10	Independent-class: Helping	Boys	4.51
IC 2: PB 9	Independent-class: Negative inattention	Boys	8.00
IC 2: PB 15	Independent-class: Positive number concepts	Boys	4.96
IC 2: PB 21	Independent-class: Math skills	Boys	6.77
IC 5: PB 2	Teacher-class: Positive attention	Girls	3.54
IC 5: PB 9	Teacher-class: Negative inattention	Boys	3.51
IC 5: PB 17	Teacher-class: Neutral number concepts	Boys	2.97
IC 5: PB 19	Teacher-class: Negative behavior	Boys	3.93
IC 5: PB 21	Teacher-class: Math skills	Boys	2.74
IC 6: PB 2	Teacher-group: Positive attention	Girls	3.08
IC 2: TR 12	Independent-class: Redirect	Boys	2.66
IC 5: TR 6	Teacher-class: Negative feedback	Boys	2.70
TA 6: PB 15	Circulate: Positive number concepts	Boys	3.97
TA10: PB 17	Helping: Neutral number concepts	Boys	3.47
TA15: PB 2	Work with: Positive attention	Girls	3.63
PB 8: TR 12	Negative conduct: Redirect	Girls	4.14

Note: IC = Instructional Context
TA = Teacher Activity
PB = Pupil Behavior
TR = Teacher Response

Table 3.6

Significant Correlations* of Teacher Responses with Boys Behavior and Girls Behavior in Reading Classes

Behavior	Teacher Responses		
	Both	Boys Only	Girls Only
Negative Conduct	REDIRECT	explain discipline	-
Negative Talking	-	explain ignore REDIRECT	-
Negative Inattention	-	ignore REDIRECT	help
Neutral Conduct	-	ignore REDIRECT	-
Neutral Inattention	-	-	Negative feedback
Neutral Engagement	-	-	explain
Neutral work habits	-	explain	help redirect
Positive engagement	no response	-	-
Positive work habits	HELP	redirect	explain
Positive direction following	-	moves on	help
Positive attentiveness	-	moves on praise	positive feedback question redirect
Positive participation	-	EXPLAIN help	-
Volunteering	POSITIVE FEEDBACK redirect explain IGNORE	recognize help moves on praise	-
Positive academic performance	POSITIVE FEEDBACK explain ignore MOVES ON	-	praise recognize
Positive phonic skills	help positive feedback praise	HELP ignore moves on PRAISE	POSITIVE FEEDBACK redirect explain
Positive oral reading	positive feedback praise	praise	POSITIVE FEEDBACK
POSITIVE Reading comprehension	positive feedback	praise	POSITIVE FEEDBACK moves on

*small letters indicate a significance level of $p \leq .05$

CAPITAL LETTERS indicate a significance level of $p \leq .001$

Table 3.7

Significant Correlations* of Teacher Responses with
Boys Behavior and Girls Behavior in Mathematics Classes

Behavior	Teacher Responses		
	Both	Boys Only	Girls Only
Negative Conduct	-	question redirect	negative feedback
Negative Talking	-	discipline recognition	-
Negative Inattention	-	-	redirect
Neutral Conduct	-	-	-
Neutral Inattention	-	redirect	NEGATIVE FEEDBACK
Neutral Engagement	-	moves on	-
Neutral Work Habits	-	recognize	-
Positive Engagement	-	recognize	-
Positive Work Habits	-	recognize	explain
Positive Direction Following	positive feedback	POSITIVE FEEDBACK	recognize
Positive Attentiveness	-	recognize	-
Positive Participation	-	praise	moves on
Volunteering	-	POSITIVE FEEDBACK	Ignore
Positive Academic Performance	positive feedback	POSITIVE FEEDBACK	moves on
Positive Number Concepts	POSITIVE FEEDBACK praise	help	moves on
Negative Number Concepts	-	positive feedback	moves on recognize
Neutral Number Concepts	-	explain help	-

*Small letters indicate a significance level of $p \leq .05$

CAPITAL LETTERS indicate a significance level of $p \leq .001$

Table 3.8

Means and Standard Deviations of Instructional Context and Teacher Activity Observation Scores in Reading Classes

	Boys (N=98)		Girls (N=107)		Total (N=205)	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
IC 1	.28	1.35	.11	.68	.19	1.06
IC 2	2.32	3.01	2.52	2.81	2.28	2.90
IC 3	5.14	4.76	3.99	3.92	4.54	4.37
IC 4	.38	1.36	.45	1.44	.42	1.40
IC 5	1.95	2.95	1.62	3.32	1.78	3.15
IC 6	3.81	5.85	4.06	7.05	3.94	6.49
TA 1	.43	.81	.37	.78	.40	.80
TA 2	.15	.52	.23	.91	.20	.75
TA 3	.93	1.58	.97	2.16	.95	1.90
TA 4	.81	1.96	.50	1.33	.64	1.66
TA 5	.14	.43	.05	.21	.09	.34
TA 6	.62	1.23	.52	1.08	.57	1.16
TA 7	.79	1.64	.86	2.06	.82	1.87
TA 8	.71	1.35	.47	1.06	.58	1.21
TA 9	.24	.79	.15	.38	.20	.61
TA 10	.57	1.00	.45	1.22	.51	1.12
TA 11	.43	.82	.36	.90	.40	.87
TA 12	.34	.69	.20	.54	.26	.62
TA 13	.94	2.26	1.09	2.18	1.02	2.21
TA 14	.43	1.40	.26	.80	.34	1.13
TA 15	4.65	4.72	4.60	4.56	4.62	4.62

Table 3.9

Means and Standard Deviations of Pupil Behavior and Teacher Response Observation Scores in Reading Classes

	Boys (N=98)		Girls (N=107)		Total (N=205	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
PB 1	.74	1.64	.03	2.07	.89	1.88
PB 2	.68	1.06	.88	1.14	.78	1.10
PB 3	.33	.73	.36	.72	.35	.72
PB 4	2.95	2.42	3.19	2.51	3.07	2.46
PB 5	.24	.70	.16	.46	.20	.59
PB 6	.26	.67	.35	.82	.31	.75
PB 7	.60	1.03	.50	.87	.55	.95
PB 8	.22	.55	.17	.40	.20	.48
PB 9	1.07	1.54	.56	1.15	.80	1.37
PB 10	.51	.97	.50	.96	.50	.96
PB 11	.30	.58	.29	.57	.29	.57
PB 12	.42	.76	.22	.54	.32	.66
PB 13	.34	.90	.19	.48	.26	.71
PB 14	.44	.79	.42	.84	.43	.81
PB 15	.35	.72	.48	.84	.41	.78
PB 16	.16	.65	.31	1.79	.24	1.37
PB 17	.20	.61	.28	.97	.24	.82
TR 1	.55	.92	.28	.60	.41	.78
TR 2	.17	.52	.09	.29	.13	.42
TR 3	.19	.45	.25	.58	.22	.52
TR 4	.32	.71	.25	.62	.28	.66
TR 5	.20	.56	.18	.45	.19	.50
TR 6	.04	.20	.01	.10	.02	.16
TR 7	9.32	5.76	8.70	6.40	9.00	6.10
TR 8	1.08	1.88	1.12	2.12	1.10	2.00
TR 9	.31	.78	.26	.80	.28	.79
TR 10	.17	.48	.14	.44	.16	.46
TR 11	.38	.84	.36	.82	.37	.83
TR 12	.51	.89	.40	.99	.45	.94

Table 3.10

Means and Standard Deviations of Instructional Context and Teacher Activity Observation Scores in Mathmematics Classes

	Boys (N=97)		Girls (N=105)		Total (N=202)	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
IC 1	--	--	--	--	--	--
IC 2	3.98	4.57	3.12	3.89	3.54	4.24
IC 3	2.59	3.19	2.49	3.15	2.53	3.16
IC 4	.09	.44	.08	.41	.08	.42
IC 5	2.63	3.50	2.44	3.15	2.53	3.32
IC 6	1.50	2.95	1.42	2.45	1.46	2.70
TA 1	.26	.54	.26	.56	.26	.55
TA 2	.31	.81	.30	1.06	.30	.95
TA 3	.56	.95	.60	1.10	.58	1.02
TA 4	.77	2.01	.61	1.64	.67	1.82
TA 5	.22	.60	.23	.54	.22	.57
TA 6	.81	1.39	.79	1.47	.80	1.42
TA 7	1.00	1.56	.85	1.53	.92	1.54
TA 8	.06	.24	.15	.46	.11	.37
TA 9	.46	.95	.42	.84	.44	.89
TA 10	1.41	2.15	.87	1.56	1.13	1.89
TA 11	.30	.63	.33	.73	.32	.68
TA 12	.01	.99	.01	.99	.01	.99
TA 13	.30	1.24	.25	.95	.27	1.10
TA 14	.48	1.50	.22	.76	.35	1.18
TA 15	2.66	2.73	2.70	2.74	2.68	2.73

Table 3.11

Means and Standard Deviations of Pupil Behavior and Teacher Response Observation Scores in Mathematics Classes

	Boys (N=97)		Girls (N=105)		Total (N=202)	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
PB 1	.04	.20	.05	.21	.04	.21
PB 2	.50	1.07	.75	1.09	.63	1.09
PB 3	.29	.56	.21	.45	.25	.51
PB 4	2.08	1.89	2.07	1.97	2.07	1.93
PB 5	.18	.43	.08	.27	.13	.36
PB 6	.16	.42	.29	.60	.23	.53
PB 7	.77	1.17	.73	.95	.76	1.06
PB 8	.22	.58	.17	.47	.19	.52
PB 9	1.05	1.42	.53	1.03	.79	1.26
PB 10	.50	.80	.36	.70	.43	.75
PB 11	.19	.51	.19	.46	.19	.48
PB 12	.16	.51	.13	.56	.15	.54
PB 13	.23	.49	.15	.52	.19	.50
PB 14	.46	.82	.42	.69	.44	.75
PB 15	1.30	1.75	1.03	1.25	1.16	1.51
PB 16	.32	.64	.22	.80	.27	.72
PB 17	.36	.66	.14	.40	.25	.55
TR 1	.36	.66	.43	.66	.40	.66
TR 2	.13	.34	.11	.44	.12	.40
TR 3	.30	.66	.20	.63	.25	.64
TR 4	.34	.69	.28	.60	.31	.64
TR 5	.03	.17	.07	.29	.05	.24
TR 6	.08	.35	.01	.10	.05	.25
TR 7	9.33	5.76	8.70	6.40	9.00	6.10
TR 8	.63	1.41	.48	.96	.55	1.20
TR 9	.18	.46	.10	.34	.14	.40
TR 10	.05	.22	.10	.38	.08	.32
TR 11	.31	.65	.23	.46	.27	.56
TR 12	.35	.58	.18	.50	.26	.54

APPENDIX 3-A

APPLE Lexicon Definition of Selected
Instructional Contexts

IC 1	ADULT-GROUP:	The class is divided into groups and an adult other than teacher is directing the activity of the group in which the child being observed is participating.
IC 2	INDEPENDENT-CLASS:	The entire class is working or playing independently of the teacher's direction. Teacher usually present but not directing.
IC 3	INDEPENDENT-GROUP:	The group of students in which the child being observed is participating is working or playing independently of the teacher's direction.
IC 4	INDEPENDENT-INDIVIDUAL	The student being observed is working or playing independently of the teacher's direction and also independently of the rest of the class.
IC 5	TEACHER-CLASS	Teacher is directing the activity and the entire class is participating.
IC 6	TEACHER-GROUP	The class is divided into groups and the teacher is directing the activity of the group in which the child being observed is participating.

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APPLE Lexicon Definition of Selected

Teacher Activities

TA 1	ACADEMIC ORGANIZING:	Teacher getting class or group organized. Giving directions, explaining and doing other activities which direct the students into activities.
TA 2	ANSWERING:	Teacher answers question(s). May refer to a single answer to a single question or to a general situation where teacher is answering questions put by several students over a period of time.
TA 3	ASKING:	Teacher is asking questions of a single student, a group, or the class.
TA 4	AT DESK:	Teacher is doing work at desk. Used when teacher's activity is unspecified or unknown and/or when she is available to help students at her desk.
TA 5	AT BOARD:	Teacher is working at blackboard, either alone (e.g., writing on board) or with student(s).
TA 6	CHECKING:	Teacher is checking work to see if material is understood, to see if instructions are being followed, to see how well work is being done, or if work is correct.
TA 7	CIRCULATING:	Teacher is circulating around room, interacting with students, asking and answering questions, giving help. Used when a more specific activity cannot be identified or when several activities are happening one after the other, too quickly to be specific.
TA 8	DISCUSSION:	Teacher is leading a discussion. Emphasis on student response and comprehension, not simply on facts.
TA 9	EXPLAINING:	Teacher is explaining something, either in response to a question or as part of a process of giving instructions.

TA 10	HELPING:	Teacher is helping a pupil or pupils in unspecified manner. Used when more precise activity, such as explaining or answering, cannot be distinguished, or when several helping activities are happening too quickly to be specified.
TA 11	INSTRUCTION GIVING:	Teacher is giving instructions either about an assigned activity or about classroom organization.
TA 12	LISTENING:	Teacher listens to a student, either during oral reading or while student speaks to her or asks a question.
TA 13	QUESTION AND ANSWER:	Teacher is asking a series of questions, which students answer. Used primarily in group or class context and distinguished from ASKING by serial nature of questions.
TA 14	SUPERVISING:	General situation where teacher is watching over class or a group. May occasionally ask or answer questions, but general emphasis is on observation rather than interaction with students.
TA 15	WORKING WITH:	General unspecified instructional activity of working with an individual, a group or the class. Used when no other teaching activity is specified.

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APPLE Lexicon Definition of Selected

Pupil Behaviors

PB 1	+ ACADEMIC PERFORMANCE:	Level of performance in school tasks; response to assignments or lessons. Correct.
PB 2	+ ATTENTIVENESS:	Act of paying attention to the subject being taught or discussed, as shown through physical orientation, gestures, verbal response. Used only in positive sense and in situation where teacher is instructing or leading lesson.
PB 3	+ DIRECTION FOLLOWING:	Behavior related to following directions given by the teacher. Cooperation with teacher directives, whether academic or behavioral.
PB 4	+ ENGAGEMENT:	Act or being involved in subject of lesson. Used when pupil working independently of teacher.
PB 5	+ PARTICIPATION:	Description of an act of joining a general class or group activity.
PB 6	+ VOLUNTEERING:	Any spontaneous offering by the child to do a job or to give information, as in response to teacher's call for volunteers or to a question put to the entire group or class.
PB 7	+ WORK HABITS:	Positive manner or method of pursuing tasks, i.e. completion of work, efficiency, organization, neatness.
PB 8	- CONDUCT:	Negative school behavior which cannot be placed under a more specific event.
PB 9	- INATTENTION:	Not paying attention to subject being taught or discussed, as shown through orientation, verbal responses, gestures. Usually implies a long-term distraction from activity being directed by teacher.
PB 10	- TALKING	Inappropriate or forbidden speaking, such as speaking out of turn or during a quiet period.

PB 11	0 CONDUCT:	Neutral school behavior which cannot be placed under a more specific event.
PB 12	0 ENGAGEMENT:	Act of being engaged in subject of lesson, but with less degree of involvement or attention than + ENGAGEMENT.
PB 13	0 INATTENTION:	Not paying attention to subject being taught or discussed. Usually implies a short-term distraction from activity being directed by teacher.
PB 14	0 WORK HABITS:	Neutral manner or method of pursuing tasks.
PB 15_R	+ ORAL READING:	Positive quality of students reading out loud; fluency, accuracy, expressiveness, pacing, etc.
PB 16_R	+ PHONIC SKILLS:	Positive evidence of skill in sounding out new words; knowing the sound connected with letters.
PB 17_R	+ READING COMPREHENSION:	Pupil's correct understanding of what he has read.
PB 15_M	+ NUMBER CONCEPTS:	Positive knowledge of numbers and number relationships. Includes identification of numerals, counting, skill with fractions, geometrical properties, etc.
PB 16_M	- NUMBER CONCEPTS:	Absence of knowledge of numbers and number relationships, in comparison with age and class level.
PB 17_M	0 NUMBER CONCEPTS:	Partial knowledge of numbers or number relationships (e.g. a concept partly understood) or absence of knowledge of concepts more advanced than required by age or class level.

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APPLE Lexicon Definition of Selected

Teacher Responses

TR 1	EXPLAIN:	Teacher responds to pupil with an explanation.
TR 2	DISCIPLINING:	Punishment imposed on child for his behavior, e.g. sent to principal's office or told to sit in corner or to stay after school.
TR 3	TEACHER HELP:	Teacher gives some specific instructional assistance to an individual student.
TR 4	IGNORING:	Teacher seemingly aware but not responding to behavior or performance of pupil.
TR 5	MOVES ON:	Teacher does not comment on or give feedback to a pupil response, as in a question and answer session; instead, she calls on another pupil or moves on to another part of the lesson. Can occur when pupil's response is correct or incorrect.
TR 6	NEGATIVE FEEDBACK:	Mild negative verbal reinforcement in response to academic or behavioral performance. e.g., "wrong," "no."
TR 7	NONE:	No response to pupil performance or behavior. No distinction made between whether teacher aware of this performance or behavior or not (unless is clearly a situation of IGNORING).
TR 8	POSITIVE FEEDBACK:	Use of mild positive verbal reinforcement in response to academic or behavioral performance. e.g., "right," "O.K.," "good," "fine," "correct."
TR 9	PRAISE:	Teacher commends or tangibly rewards a student's activities or products.
TR 10	QUESTIONING:	Teacher responds to pupil's behavior or answer to a previous question by herself asking a question.

TR 11	RECOGNIZING:	Teacher's neutral nonevaluative response to an academic performance or a nonacademic behavior. e.g., "notices", "acknowledges".
TR 12	REDIRECTING:	A verbal or non-verbal action by the teacher to redirect a pupil's behavior. Done without apparent anger.

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Appendix A

APPLE Observer Manual--Revised

APPLE

Anecdotal
Processing to
Promote the
Learning
Experience

Manual for APPLE Observers

MANUAL FOR APPLE OBSERVERS

Nadine M. Lambert
Carolyn S. Hartsough
Cathleen M. Caffrey
Carolyn Urbanski

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Revised for Sex Equity in Classroom Interaction Study, ETS, 1980.

MANUAL FOR APPLE OBSERVERS

Nadine M. Lambert
Carolyn S. Hartsough
Cathleen M. Caffrey
Carolyn Urbanski

University of California
Berkeley

OVERVIEW

The goal of classroom observation in many studies of school effectiveness is to specify the observable teacher and pupil behaviors which affect pupil outcomes in learning. In order to meet the constraints imposed by traditional data analysis procedures, most currently used observation systems have sacrificed the descriptive richness of anecdotal material in favor of reliance on procedures yielding easily quantifiable behavioral categories. The APPLE (Anecdotal Processing to Promote the Learning Experience) observation procedures yield naturalistic anecdotal descriptions of behavior while at the same time allowing use of codes which make computer based data analysis possible. These procedures were developed by collecting observations in some 150 natural classroom settings. About 2000 elementary school students were observed over a three year period.[1] Observers employed no a priori categories or lists of behaviors in making these original observations. Their only instructions were to record descriptive statements of what they believed to be important information about children in school. These observations were in turn used to develop a series of lexicons. The lexicons for the APPLE system are lists of code words with computer abbreviations and definitions by which observations are encoded before they enter the observation

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[1]Lambert, Nadine M. The Stress of School Project, USPHS, NIH Grants MH14, 106-01, 02, 03, 04, 05, and 06.

records for data processing. The lexicons are open systems. They can be augmented by the addition of new categories at any time that an observable set of behaviors with similar characteristics cannot be adequately assigned an existing lexicon term.

The information about observable pupil and teacher behavior, the procedures for collecting classroom observations, and the lexicons which were developed in this project have subsequently proved valid for additional kinds of research and evaluation uses. These observation procedures have been used by many other observers with children of varying age levels and in many different types of classrooms.

GENERAL GUIDELINES

Each observer should have some knowledge of the intellectual, social, emotional and physical characteristics of students in the age ranges to be observed. Such knowledge, along with previous experience in simple classroom observation and in assessment, are the two desirable prerequisites for the observation task. Moreover, objective descriptions of the behavior of teachers and pupils are mandatory so that these behaviors can be classified later according to the APPLE lexicons. Below are general descriptions of the types of things to look for. Later in the manual, detailed explanations relating these categories to the observation form will be presented.

What Is An Observation?

The observation as it is actually recorded is called an EVENT. The Event is defined as anything which an observer sees a student do or anything which was observed to happen to him/her. In addition, an Event will normally include other circumstantial information which will be described below. In response to particular project needs, reports about the observed student(s) by other students or adults or written information from school records may

be considered Events.

What Activities or Behaviors Should Be Recorded?

Pupil Behaviors. Almost any behavior of a student that comes to your attention may be considered. In addition, reports by teachers, other adults in the school and written records may be included if project goals require this sort of information. However, one generally looks for some of the following, depending on project aims.

1. Academic - Intellectual
   a. Signs of unusual strengths or weaknesses, including oral and written work, responses to questions, etc.
   b. Change from usual level of performance.
   c. Responses to new methods, to the teacher(s), etc.
   d. Performance in various situations, including small group, individual and class instruction.
2. Social - Emotional
   a. Usual method of relating to peers.
   b. Changes in peer relations.
   c. Aggressive, attention-getting, immature, or inappropriate behavior.
   d. Successful coping with a difficult or potentially difficult situation.
   e. Relationships with familiar adults - principal, nurse, counselor, substitute teachers, etc.
3. General Behavior
   a. Attention level.
   b. Restlessness.
   c. Alertness.
4. Physical Appearance (if out of ordinary, very good or very poor)
   a. General grooming.

b. Health.

c. Signs of fatigue.

d. Nutrition.

e. Stature (weight and height).

5. Anything else you deem important. Be sure the reasons for making the observation is obvious to others; otherwise it will appear that you have recorded a trivial observation.

Teacher/Pupil Responses. Since one of the objectives of observation is to determine the nature of teacher-pupil and pupil-pupil interactions, each pupil behavior observation must be accompanied by a description of both the teacher and other pupil response, if there is one. If the target pupil has interactions with any other adult in the classroom, such as an aide, the responses of this person should also be recorded and distinguished from the response/lack of response of the classroom teacher in the Teacher Response box. In the APPLE Lexicon, we have defined a fairly large number of teacher or pupil responses which have been observed to accompany pupil behavior. These descriptions will give you examples of the kinds of teacher or pupil behavior you are likely to observe, including nonverbal responses. A Pupil Response lexicon will be created using the responses from events recorded in this project.

Antecedent Teacher/Pupil Behaviors. Quite often the observer is likely to note the teacher, another adult, or another child saying something directly to a target student which initiates or precipitates behavior on the student's part (e.g., instructions to a lesson or a reminder about what the student should be doing). When such pupil/teacher/other adult behavior is directed at an observed student, the initiating (antecedent) behavior should be included in the observation record.

Teacher Activities. While observation records describe student behavior and teacher-student interaction, it is important that the instruction activities of the teacher also be clarified. The observer, therefore, will need to note the teacher's continuing activities which are independent of what

the students are observed to do. These activities may include explanation of a procedure or a lesson, organizing the lesson activity, leading a lesson activity, conducting a discussion, lecturing or leading a question and answer period. Each time the teaching activity changes, it should be noted along with the observations being made. The Teacher Activity Lexicon defines the activities of teachers most commonly observed in previous work.

Pupil Activities and Learning Contexts. In addition to information about observed behaviors of students and teachers, records about these two aspects of classroom life are also desirable. Each time an observation is recorded, the observation form provides spaces for the observer to indicate the pupil activity and learning context for that Event. A detailed definition and description of each of these circumstances of observed behavior and the labels to be used are found in the Pupil Activity and Context Lexicons.

How Many Observations Should be Made?

The general rule is that observations should be recorded as quickly as possible. In practice, the number of observations recorded for each pupil during a typical 30 minute observation will be a function of the number of significant behavioral events which are observable. In addition, in elementary school classrooms, the observer should make an observation each time a student's learning context changes (e.g. a change from a teacher-led group to an individual seatwork assignment). In high school classrooms, the observer should make an observation each time the teacher activity changes. In any case, no fewer than three observations per target student should be made during any 30 minute period. In the past we have found it useful to begin the observation period by making one observation of each target student, followed by at least two observations (two altogether, not two for each target student) for each subsequent five minute period.

Since highly visible students tend to monopolize the observer's attention, care should be taken to make observations for all target students. For example, no clearly distinguishable events may occur for the student who is quietly and productively engaged during the entire 30 minute observation period. In this case, all events for this student should be repetitions of the fact that the student is productively engaged. In other words, an event need not be equivalent to an incident which stands out clearly from the surrounding classroom activity.

What Position Should the Observer Take in the Classroom?

The observer will assume a role somewhere between participant observer and potted palm. Each observer is expected to become familiar enough to the students that he/she will not attract unusual attention while entering and leaving the room, though this may be difficult when observations are not done over an extended period. Depending on the activities being carried on by the students and teacher, the observer should find a position in the classroom which allows maximum visual access to the activities and behaviors of the students. This will sometimes involve the observer with the activities; such involvement is permissible so long as the observer does not become a teacher's aide or take over the teacher's responsibilities. Acceptable involvement might include a short period of individual work with a student or small group if this contact enables the observer to gather information about the students, such as academic skills, particular learning weakness or behavioral responses to specific tasks. However, the observer should avoid becoming identified in any role other than that of observer. Activities such as described above would be the exception rather than the rule.

INFERENCE IN OBSERVATION

How Will You Make Clear the Intent of Your Observations?

The behavior which is recorded may be considered to belong on a continuum of descriptive precision ranging from simple statements about overt acts, e.g. "David put his coat on," to pure inferences regarding the intent or meaning of a behavior without reference to the act itself, e.g. "David is feeling insecure." Making inferences in observational procedures is unavoidable. Whenever you choose to record a particular occurrence, you have inferred something about the behavior of the student which caused you to make a record. Some uses of inference are better than others, however, and you will usually want to be somewhere in the middle of the continuum. This is done by including facts to support any inferences you make. For example, the following describes what the student did, what the classroom circumstances were at the time and what inference was made about the behavior: "David put on his coat. It is 75° in the classroom and he is the only one with his coat on --he did this yesterday." In this example, enough accessory information is provided to identify the act of David putting his coat on as unusual.

There are some types of inference you will want to make explicit as well as some you will want to avoid. Three types of explicit inferences you might make could be statements about:

1. Possible causal relationships
2. Inferred personality characteristics
3. Inferred stress which is affecting the pupil's classroom behavior.

When you do make such inferences, please observe these rules:

1. Do not embed your inference in the observation itself. Separate the inferential statement.

BAD: Don, a dependent child, cried when his mother left the room.

BETTER: Don cried when his mother left the room. (probable sign of dependency)

2. Do not generalize from a single observation.

In the example below, we assume that the observer has seen examples of Steve's hostility before so that evidence need not be cited in support of this. It is the responsibility of the observer, therefore, not to generalize from the first occurrence of a particular behavior.

EXAMPLE: Steve hit Pete without apparent provocation. (Steve has a large reservoir of hostility)

3. Never make inferences about psycho-dynamic constructs such as "reality testing," "body image," "acting out," etc.

USING THE OBSERVATION FORM

The observation form is designed to accommodate written records of three Events. In the most usual case, you will be writing a single observation (Event) in each of the three sections of the observation form. Please write your observations in ink, preferably blue or black. Do not use either pencil or red ink. Pencil too easily becomes smudged with the handling the forms receive during encoding and keypunching, and red ink is reserved specifically for coding each pupil's record. Since someone else will have to read what you have written, you must write legibly. If your handwriting is habitually messy or difficult to decipher, it will be worse under the pressures and inconveniences of recording in the classroom. Therefore, you may wish to print rather than to write in script. If possible, you should also re-read your observations before turning them in, to clarify ambiguities or rewrite illegible words. It may not be possible to complete all required information regarding the circumstances of the event during the actual observation period. When this is the case, be certain to make sufficient notes on the forms so that you can fill in the information at the end of the

observation period. This freedom, however, does not extend to your description of the actual behavior event. Do not rely on your memory to fill in these details.

General Identifying Information

Refer to the sample observation form on page 10. Across the top of the page you will find space to fill in the time each new page of observations is begun, the subject matter of the class being observed, your name, the date on which you are making the observations, and the name of the teacher of the student(s) you are observing. You will use as many of these sheets as needed during an observaiton period. Number each page in sequence in the space provided (next to the teacher's name) in order to keep your observations in chronological order. Always start a new sheet on a new observation day or when you change from one classroom and/or teacher to another. Except for time and page number, the remainder of the spaces at the top of the form may be filled in at the end of the observation period.

Data Categories

For each of the three sections used for recording events on the observation form, there are several categories of information required, each identified by a specific heading. These headings represent information, some of which you are required to fill in at the time of observation, the rest of which will be labeled by coders after the observations are turned in. The lexicons of codes which have been developed from other projects may be used as they stand or may be extended or amended as dictated by specific project requirements. When a particular mandatory entry is not applicable to the observation, put "NA" in the appropriate location. An example would be teacher's report on personality characteristics or home situation; in this case, none of the circumstantial information (pupil activity, teacher activity, etc.)

APPLE Observation Form

Time	Subject Matter

Observer	Date	Teacher	School	Page

Code	Context	Context Time

Teacher Activity:

Pupil Activity:

Target Pupil	Antecedent Teacher Behavior	Antecedent Pupil Behavior	Event Name	Teacher Response	Other Pupil Response	Teacher Activity	Pupil Activity

Ante. Behavior

Descrip. of Event:

Teacher Response: + 0 -

Other Pupil Response: None N.A.

Target Pupil Responde + 0 -

Code	Context	Context Time

Teacher Activity:

Pupil Activity:

Target Pupil	Antecedent Teacher Behavior	Antecedent Pupil Behavior	Event Name	Teacher Response	Other Pupil Response	Teacher Activity	Pupil Activity

Ante. Behavior

Descrip. of Event:

Teacher Response: + 0 -

Other Pupil Response: None N.A.

Target Pupil Responde + 0 -

would be relevant.

In the following sections, detailed explanations of each mandatory and non-mandatory entry will be given. Each entry is identified by a circled number on the sample observation form which corresponds to the number of the entry being explained.

Mandatory Entries

(1) CONTEXT: The entry CONTEXT provides a description of different school settings which may have important influences on the student's school behavior. Context is determined not by the event itself, but by the school situation in which the event occurs. There are several aspects of classroom organization which are reflected in the context lexicon. A more complete explanation of this lexicon and its uses is provided beginning page 16. This is the only entry for which the observer must learn a lexicon of codes.

(2) TEACHER ACTIVITY: In this space, the observer should note as specifically as possible the teacher's activity at the time of the event. Note that this activity may continue over the course of the recording of several events. The observer should familiarize himself with the teacher activity lexicon in order to be cognizant of the range and types of activities which may be seen.

(3) PUPIL ACTIVITY: This entry refers to the content of the observed student's instructional or classroom program in progress at the time the event is recorded. Be as specific as possible in describing activities. It is important that the observer not confuse the focus of the lesson with a general "subject matter" label. For example, "addition" is preferable to "math," "phonics" to "spelling workbook," and "taking dictation" to "shorthand." The more general terms should only be used when the observer cannot

determine the nature of the activity. If necessary, the observer should consult with the teacher after class to obtain more accurate information about the activities of the pupils. If the subject of the observation, at the time it is recorded, is involved in more than one activity (for example, doing a math worksheet with both addition and subtraction problems), try to indicate as many of these activities as possible.

(4) SUBJECT: Enter name of target pupil being observed.

(5) ANTECEDENT BEHAVIOR: Give an anecdotal description of any pupil/teacher/other adult behavior which directly initiates or precipitates the target pupil behavior described in the event. This will not necessarily occur for every event. An example of an antecedent behavior recorded in the event would be, "Teacher calls on subject. Subject gives correct answer." An example of a teacher behavior which should not be described as an antecedent is "Teacher is dismissing class for lunch. Subject is working quietly on addition paper." In this example, the teacher behavior reported did not precipitate the pupil's behavior.

(6) DESCRIPTION OF EVENT: You now have 2 lines on which to record the actual observation. Please follow the few guidelines below when writing your observations. They will be easier to encode and easier for the keypuncher to transcribe if you do.

1. <u>Record the sequence of an event in chronological order</u>.

   BAD: Allen and Steve were reprimanded by teacher for not being quiet during spelling lesson.

   BETTER: Allen and Steve were noisy during spelling lesson. Teacher reprimanded them.

2. <u>NEVER make a running commentary on classroom activities</u>. Separate the anecdotal material into events which can stand alone. If an incident seems to consist of more than one event, try to record each probable event in a different space.

3. Report the circumstances surrounding the event in sufficient detail, including precipitating factors, prior conditions, consequences, follow-up, etc. If the event, complete with all the surrounding information, is too long to record in a single 2 line section, you may continue it in the following section, indicating in some manner that it is a continuation of the previous event. You may find that in reporting a particular incident in sufficient detail, you will have more than one event. In the latter case, be sure to separate the events on the observation form.

(7) QUALITY OF PUPIL BEHAVIOR: In this space the observer is asked to rate the pupil's behavior with respect to the academic/nonacademic expectations of the typical classroom. A "+" rating would be assigned to a correct answer, a well done assignment or to a positive, productive, involved behavior. A "-" rating would be assigned to an event in which the pupil behavior was disruptive, uncooperative or non-productive, or in which the pupil failed to understand a concept, to complete an assignment, or to give a correct answer. A "0" rating would be used when the quality of the behavior is neutral or indeterminate. Some observers are reluctant to assign negative ratings to student behaviors for fear that they may be misjudging the student. It is important to realize that a negative rating as used here is not a condemnation of the student, but rather an indication of whether or not the behavior meets the requirements of the classroom at the moment. For example, a student who appears to be daydreaming may be thinking of an assignment, but he is not participating in the work he is supposed to be doing at the moment.

(8) TEACHER/PUPIL RESPONSE: For each pupil event, the observer must record a teacher response. In many cases this response will be "None" or "N A" and these codes should be appropriately circled on the form. "None" is typically appropriate when the teacher is unaware of the pupil behavior. "N A" is normally used when the teacher is out of the room. In the case where the teacher response is non-verbal, it is important that the appropriate description

of non-verbal behavior be made. Frowns, smiles, notices but does not comment, rewards with lifesavers or ignores would be examples of non-verbal teacher behavior which might accompany a pupil event. Please be as specific as possible in making a record of the teacher response. The observer may wish to refer to the Lexicon of Teacher Responses for examples of teacher behavior which have been observed in the development of the APPLE observation system. An occasion may arise in which another adult, such as an aide, responds to the student's behavior. In such a case, the aides' response would be recorded and designated as being an aide response. The likely teacher response of "None" would also be indicated. If, during the course of observation, the teacher volunteers a personal statement or opinion about one of the pupils being observed, record this material as a separate event whether or not there was an accompanying pupil behavior.

Non-Mandatory Entries

For each of the three sections of the observation form, there are a number of categories of information which the observer may or may not be required to complete. The decision regarding this matter will depend on the procedures established by each individual user of the system.

(9) CODE: A code number identifying each subject for data processing purposes will be assigned to each student. The observer may be required to fill in this code number, using a list he/she is given. When this is necessary, it is usually done at the end of the observation period.

(10) CONTEXT TIME: Some projects may require the observer to indicate the duration of contexts for each student. This is accomplished by indicating the starting times of each context for each student as his contexts change. The change from one context to another will not necessarily occur at the same time for every student. At a later time, the duration of each context can be

computed by comparing the starting times for each context for each subject.

(11) TEACHER TIME: Some projects may require the observer to indicate the duration of teacher activity for each student. This is done in the manner described for CONTEXT TIME.

(12) ANTECEDENT TEACHER BEHAVIOR, (13) EVENT NAME, (14) TEACHER RESPONSE, (15) TEACHER ACTIVITY, (16) PUPIL ACTIVITY, (17) ANTECEDENT PUPIL BEHAVIOR, and (18) OTHER PUPIL RESPONSE. Based on the anecdotal material recorded by the observer, appropriate lexicon codes will be assigned for each of these categories. Most observers will not be required to assign these codes as a thorough knowledge of the lexicons is required for their correct use.

APPLE LEXICONS

Beginning on the next page are the APPLE system codes developed for the following: Context; Event; Teacher Response; Teacher Activity; and Pupil Activity. The codes assigned for Antecedent Teacher Behavior are currently taken from both the Teacher Response and the Teacher Activity lexicons as appropriate. The expanded definitions of these codes are presented in the Lexicon for APPLE Observations.

Each research project utilizing the APPLE system may require expansion or modification of the lexicons when the content of the observation records require it. The rule for entering a new lexicon term is that it describes rather than interprets observed behavior and that it represents a class of behaviors that will be observed frequently or that are crucial to the goals of the observation even if observed infrequently. In order to enter the APPLE Information System for data processing, the lexicon terms must be designated by a "legal" name of no more than a specified number of characters for each category being amended: Event codes are 12 letters, Antecedent Teacher Behavior, Teacher Response, Teacher Activity are 7 letters (with an extra

space allowed to identify adults other than the main teacher, making 8 total), pupil activity is 8 letters, and context is 4.

CONTEXT

The entry CONTEXT provides a description of different types of classroom settings. These settings may have important influences on a student's school behavior as they reflect the teacher's choice of organizational and leadership strategies. Included in this entry are descriptions of the degree of individualization of classroom assignments and the nature of the working relationship of the observed student to the teacher and other working students in the class. Specifically, there are four categories of classroom leadership and organization to be considered in describing a classroom context. The categories reflect answers to the following four questions:

1. Who, if anyone, is in charge of the instructions of the observed student?
2. To what extent is the observed student working in the same subject matter area as the rest of the class?
3. To what extent are the assignments or activities individualized within the subject matter area(s)?
4. What is the working relationship of the observed student to the others in the class?

The context code, which is described below, consists of 4 letters, each reflecting the answer to one of the four questions. The code letters are to be written in the sequence that the above questions are asked. If an observer cannot determine the proper code for any category, leave the category blank and describe the classroom situation as fully as possible in another location on the observation form. At a later time, the observer can consult with other observer or coders to determine the proper coding.

1. Who, if anyone, is in charge of the instruction of the student?

CODE	CIRCUMSTANCE
T	The teacher is instructing the observed student individually or as a member of a group or of the entire class.
U, V, W, etc.	Teacher(s) other than the homeroom teacher are in charge of the observed student, individually or as part of a group or the class, for specified subjects or activities. This usually occurs when all or part of a class, including the observed student, is sent to another teacher or when another teacher comes to the classroom. The number of alternative teacher codes will depend on the number of teachers involved during the observation periods and are assigned in the sequence in which the teachers take charge of the observed student. For example, a music teacher may come into the room right after opening activities; this teacher is coded "U". Later the observed student may be sent to another teacher for a math lesson; this teacher is coded "V". (This system of identifying teachers by assigning them the letters "U", "V", "W", etc. may need to be modified or defined differently in a high school setting).
S	A substitute is in charge
A	Another adult (aide, principal, etc.) is in charge.
I	The target student is working idependently of the teacher or other adult direction. No one is in charge of the student's work, except in a general supervisory capacity.
B, G, (B-the tutor is a boy) (G-the tutor is a girl)	The target student is being tutored or is otherwise in the charge of another student. This is not necessarily restricted to a one-to-one interaction. The student in charge may be responsible for directing a group or even the entire class. Note that if the target student is the tutor/leader, his/her context code for this category is "L", not "B" or "G".
L	The target student is working independently of the teacher or other adult direction and is in charge of at least one other student.

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2. To what extent is the observed student working in the same subject matter area* as the rest of the class?

CODE	CIRCUMSTANCE
I	The target student is doing work in a subject matter area completely different from anyone else in the class (e.g. doing spelling while the rest of the class is doing math). There may be more than one student with the designation "I" in this category, so long as each student's subject matter area is different from anyone else's.
G	Groups of students are working in different subject matter areas.
C	The entire class is working in the same subject matter area. This is the most common designation. This code is used even when there are a few individuals with the designation "I" in this category.

3. To what extent are the assignments or activities individualized within the subject matter area(s)?

CODE	CIRCUMSTANCE
I	The target student is doing an assignment different from the rest of the class or everyone in the class has a different assignment. This includes assignments such as SRA reading materials or book reports where each assignment or activity is different, even though of essentially the same type.
G	Several students (2 or more) have been given the same assignment; e.g. some students have been assigned the same reading worksheet, while some are doing the same reading workbook exercise.
C	The entire class is doing the same assignment. A few individuals may be "I," but the rest of the class is not considered a group.

*For this code, subject matter area has a broad definition. For example, there are several specific types of reading, language arts, English and mathematics activities which come under these general headings. For the purpose of assigning this code, the general rather than the specific activity should be attended to. The activities which occur under these general headings may differ from class to class and school to school. In general, we have accepted the classroom teacher's name for the subject matter area. For example, one teacher may distinguish between reading and English while another may categorize both these activities under either reading or English or together under the label language arts.

4. What is the working relationship of the student being observed to others in the class?

CODE	CIRCUMSTANCE
I	The observed student is working by himself/herself. The assignment may be the same for everyone or may have been given to a group of students, but the observed student is working alone. This code is to be used when conversation between students is not formally allowed although occasional conversations may occur. This code is also used when the observed student is working individually with the teacher, aide, or another adult.
All Girl Group-G, All Boy Group-B, Mixed-Group-X,	Students are working together in an all girl (G), all boy (B), or mixed (X) group, sharing information, helping each other. This code is used primarily when the teacher is leading the group. If this is not the case, the choice of "B", "G", or "X" is determined either by the teacher's statement that children may work together or be evidence that this is accepted classroom procedure. For occasional interaction in an essentially independent working situation, see "I".
C	Students are working together as a class unit. Most often this occurs when the code for category 1 is "T", "U", "V", etc., but may occur (rarely) when category 1 is "I". This would happen in circumstances such as games or rainy day activities where the class is carrying on independently of the teacher.

Comments on Difficulties in the Use of Codes for Category 1

1. There may be both "I" and "T" contexts occurring concurrently in the classroom. In this case, the code is determined by the observed student's circumstances. One student may be in a "T" group while another is in an "I" group. These circumstances will change during the observation periods as students move in and out of different contexts.

2. If a group of students is sent from their homeroom teacher ("T") to another teacher ("U", "V", "W", etc.) where they then become part of a new class grouping, they are designated "C" in the appropriate categories, even though to the class in which they are participating they are a group from their homeroom. They become "B", "G", or "X" only if the new teacher subsequently further divides the class. In the homeroom classroom, the remaining group of students are considered "C" even if there is an influx of students from other classes. If the new students join the remaining students and function as a class, the designation remains "C"; however, if the students are then assigned to or break into groups, each group then becomes "B", "G", or "X".

3. When the class is seeing a film or assembly, and the teacher is present, the code for category 1 is "T", even if the teacher is only supervising.

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4. When the whole class (or groups) are working basically independently, and the teacher is going around the room, helping, checking, etc. the code for category 1 is "I".

5. If the teacher works intensively for more than 2 minutes with the observed student, the context becomes "T" for that child. For teacher-student interactions of less that 2 minutes, the observer is to use his/her discretion to determine whether the context becomes "T" and usually bases his/her judgement on the importance or intensity of the interaction.

6. If a teacher begins to work with a group of children, the rest of the class automatically becomes another group.

Examples of Codes for Particular Situations

It is recommended that the observer use the examples presented below as an opportunity to practice the assignment of codes for each of the four categories. Cover the explanation portion while reading the example and decide for yourself which of the codes would be assigned for each category.

A. Common examples

1. I C G I

Example: The teacher is circulating. The class is working in reading, one group doing reading workbooks, another doing silent reading. The observed student is working alone at desk on reading workbook.

Explanation:
- I - Work is independent of adult leadership.
- C - Every student in the class is working in the same subject matter area.
- G - Different groups have different assignments.
- I - The observed student is working independently of anyone else.

2. I C C I

Example: The teacher is circulating, checking work. The entire class is doing the same reading worksheet. Observed student is working alone at desk.

Explanation:
- I - Work is independent of adult leadership.
- C - Every student in the class is working in the same subject matter area.
- C - Whole class has the same assignment.
- I - The observed student is working independently of anyone else.

3. T C G G

Example: The teacher is leading a group in oral reading while the rest of the class is doing a written reading exercise. Observed student is in the teacher's group, which containes only girls.

Explanation:
- T - The teacher is leading a group of which the observed student is a member.
- C - Class is working in same subject area.
- G - Each group in the class has a different assignment.
- G - Observed student is part of a group of girls that are working together.

(Note: "I C G I", "I C G B" and "I C G X" may also be occurring concurrently.)

4. T C C C

Example: Teacher is directing a phonics drill with the whole class.

Explanation:
- T - Teacher is leading the whole class.
- C - Whole class is working in same subject matter area.
- C - Whole class has same assignment.
- C - Class is functioning as a unit, including observed student.

B. Occasional examples (partial list only)

1. I I I I

Example: Observed student is doing spelling alone at desk while the rest of the class does math.

Explanation:
- I - Observed student is working independently of teacher's leadership.
- I - His/her subject matter is different from anyone else in class.
- I - His/her assignment is therefore different.
- I - Observed student is working alone.

2. I G I I

Example: Observed student is reading a book while part of the class is doing a reading workbook exercise and another part of the class is doing math.

Explanation:
- I - Observed student is working independently of teacher's leadership.
- G - Observed student is working in the same subject matter area as several other students.
- I - His/her assignment, however, is different
- I - Observed student is working alone.

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3. I C I I

Example: Observed student is doing subtraction exercise alone while the rest of the class does an addition exercise.

Explanation:
- I - Observed student is working independently of teacher's leadership.
- C - Whole class is working in same subject matter area.
- I - Observed student's assignment is unique.
- I - Observed student is working alone.

4. T I I I

Example: Teacher is listening to observed student read aloud while the rest of the class does an addition exercise.

Explanation:
- T - Teacher is working with observed student.
- I - Observed student's subject matter area is different than anyone else's.
- I - His/her assignment is therefore different.
- I - There are no other students involved.

5. T G I I

Example: Teacher is listening to observed student read aloud while part of the class does written reading exercise and the rest does math.

Explanation:
- T - Teacher is working with observed student.
- G - Observed student is working in the same subject matter area as several other students.
- I - His/her assignment, however, is unique.
- I - There are no other students involved.

6. T C I I

Example: Teacher is helping observed student with addition exercise white rest of class doing subtraction.

Explanation:
- T - Teacher is working with observed student.
- C - Whole class is working in same subject area.
- I - Observed student's assignment is unique.
- I - There are no other students involved.

7. I C C C

Example: While teacher corrects papers at her desk, class is playing spelling bee together.

Explanation:
- I - Observed student is working independently of teacher's leadership.
- C - Whole class is working in same subject matter area.
- C - Whole class is doing same activity.
- C - Class is working together as a unit.

8. L C G X

Example: The target child is a girl who is tutoring or helping a boy on an assignment he missed; other students are working on math in groups.

Explanation:
- L - The target child is supervising/ tutoring another child.
- C - Whole class is working same subject matter area.
- G - Each group in the class has a different assignment.
- X - The target student is in a mixed or cross sex group (pairs are groups).

9. B I I B

Example: The boy target child is being tutored by a boy on spelling while the rest of the class does math.

Explanation:
- B - Observed student is being tutored by a boy.
- I - Subject matter is different.
- I - Activity is different.
- B - The target pupil is a boy and so is the tutor.

PUPIL BEHAVIOR LEXICON

ABILITY AND ACADEMIC PERFORMANCE

Abbreviation	Pupil Behavior Name
ACAD PRFRMNC	Academic Performance
APTITUDE	Aptitude
CNVRGNT PROD	Convergent production
DIVRGNT PROD	Divergent production
GNRL-KNOWLDG	General knowledge
INTERESTS	Interests
INTLCTL FUNC	Intellectual Functioning
LANGUAGE	Language
LISTEN COMP	Listening comprehension
MEMORY	Memory
NMBR CONCPTS	Number concepts
ORAL READING	Oral reading
PHONIC SKILL	Phonic Skill
READING COMP	Reading comprehension
READING VOCAB	Reading vocabulary
SHAPES-FORMS	Shapes and forms
TEST PRFRMNC	Test performance
VOCABULARY	Vocabulary

INTERACTIONS

Abbreviation	Pupil Behavior Name
AGGRESSION	Aggression
ANTI-SOC BEH	Anti-social behavior
ATN-GTNG BEH	Attention-getting behavior
COMPETITION	Competition
CONFORMITY	Conformity
CNTROLNG BEH	Controlling behavior
COOPERATION	Cooperation
DSRPTV CNDCT	Disruptive conduct
FIGHTING	Fighting
MEDDLING	Meddling
MIMICKING	Mimicking
PHYS CONTACT	Physical contact
REASSURANCE	Reassurance
RIVALRY	Rivalry
SEXUAL BEHAV	Sexual behavior
SOCL RLTSHPS	Social relationships
SPEAKING	Speaking
TATTLING	Tattling
TEASING	Teasing

ORIENTATION TO INSTRUCTION

Abbreviation	Pupil Behavior Name
ATTENTN SPAN	Attention span
ATTNTVNESS	Attentiveness
CHEATING	Cheating
COPYING	Copying
DRCTN-FLLWNG	Direction-following
DIV TACTICS	Diversionary tactics
ENGAGEMENT	Engagement
EGRESS	Egress
PRTICIPATION	Participation
PUNCTUALITY	Punctuality
QUESTIONING	Questioning
SITTING BEH	Sitting behavior
PUPIL HELP	Pupil help
PUPIL RQUEST	Pupil request
TALKING	Talking
VOLUNTEERING	Volunteering
WANDERING	Wandering
WITHDRAWAL	Withdrawal
WORK HABITS	Work habits

AFFECTIVE BEHAVIOR

Abbreviation	Pupil Behavior Name
AFFECT	Affect
ANGER	Anger
BIZARRE BEH	Bizarre behavior
COMPLAINING	Complaining
CONDUCT	Conduct
CRYING	Crying
ENTHUSIASM	Enthusiasm
FANTASY	Fantasy
FRUSTRATION	Frustration
GIGGLING	Giggling
HURT FEELING	Hurt feeling
IMPERTINENCE	Impertinence
RESPONSVNESS	Responsiveness
SULKING	Sulking
TANTRUM	Tantrum
WHINING	Whining
YELLING	Yelling

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PERSONALITY TRAITS AND ATTITUDES

Abbreviation	Pupil Behavior Name
ADJUSTMENT	Adjustment
ANXIETY	Anxiety
ATTITUDE	Attitude
DECISION-MAK	Decision-making
DEFENSIVNESS	Defensiveness
FEAR FAILURE	Fear of failure
INDEPENDENCE	Independence
MATURITY	Maturity
MOOD	Mood
NERVS HABITS	Nervous habits
PRSNL CHRACT	Personality characteristics
PRSNLTY TYPE	Personality type
POSSESSIONS	Possessions
RESPONSIBLTY	Responsibility
SELF-AWARNSS	Self-awareness
SELF-CONCEPT	Self-concept
SEX ATTITUDE	Sex attitude
SHYNESS	Shyness

PHYSICAL CHARACTERISTICS AND ACTIVITY

Abbreviation	Pupil Behavior Name
ACTIVTY LEVL	Activity level
ATTIRE	Attire
AUTO-EROTIC	Auto-erotic behavior
EATING BEHAV	Eating behavior
FATIGUE	Fatigue
HANDEDNESS	Handedness
HEARING	Hearing
HUNGER	Hunger
IMPLS CONTRL	Impulse control
MOTOR BEHAV	Motor behavior
NEURO FACTRS	Neurological factors
PHYS APPRNC	Physical appearance
RESTLESSNESS	Restlessness
SLEEP BEHAV	Sleep behavior
SUCKING BEH	Sucking behavior
TOILET BEHAV	Toilet behavior
VISION	Vision
VIS-MOT ORG	Visual-motor organization

HEALTH AND ILLNESS

Abbreviation	Pupil Behavior Name
ATTENDANCE	Attendance
HOSPITLIZATN	Hospitalization
ILLNESS	Illness
INJURY	Injury
MED HISTORY	Medical history
MED TREATMT	Medical treatment
MEDICATION	Medication
PHYS COMPLNT	Physical complaint
PHYS CONDITN	Physical condition

FAMILY HISTORY AND CHARACTERISTICS

Abbreviation	Pupil Behavior Name
ADOPTION	Adoption
ALCOHOLISM	Alcoholism
EDUC HISTORY	Educational history
FAMLY BACKGD	Family background
FAMLY CONCPT	Family concept
FAMLY DEATH	Death in family
FAMLY STUATN	Family situation
FMLY CNSTLTN	Family constellation
FMLY RLTSHPS	Family relationships
FOREIGN LANG	Foreign language
MARTL SPRATN	Marital separation
MARTL STATUS	Marital status
OCCUPATION	Occupation
OVER PROTCTN	Over protection
PARNTL PRSSR	Parental pressure
PARNT REQUST	Parent request
RACE	Race
REJECTION	Rejection
SCHL SUPPORT	School support

ADMINISTRATIVE-OTHER

Abbreviation	Pupil Behavior Name
OBSVR JUDGMNT	Observer judgment
REFERRAL	Referral
SCHEDULING	Scheduling

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TEACHER RESPONSE LEXICON

INSTRUCTING RESPONSES

Abbreviation	Response Name
ASKING	Asking
ANSWER	Answering
ASSIGN	Assigning
CHECK	Checking
CORRECT	Correcting
EXPLAIN	Explaining
HELP	Helping
INSTRCT	Instructing
MOVESON	Moves on

POSITIVE RESPONSES

Abbreviation	Response Name
ENCRGMT	Encouragement
PERMITS	Permits
POSFEED	Positive feedback
PRAISE	Praise
REWARD	Reward

NEUTRAL RESPONSES

Abbreviation	Response Name
NOFEED	No feedback
NONE	None
RECGNIZ	Recognizing

NEGATIVE RESPONSES

Abbreviation	Response Name
CRTICSM	Criticism
NEGFEED	Negative feedback
REFUSES	Refuses
WARNING	Warning

MANAGING RESPONSES

Abbreviation	Response Name
DISCPLN	Discipline
IGNORE	Ignoring
INTRVEN	Intervention
MNAGMNT	Management
MEDIATN	Mediation
PHYSPUN	Physical punishment
REDRECT	Redirection
RPRIMND	Reprimand
SEATING	Seating

RESPONSES TO PUPIL FEELINGS

Abbreviation	Response Name
ACCEPT	Acceptance
INHIBIT	Inhibition of Communication

ATTITUDES*

Abbreviation	Response Name
AFFECT	Affect
CHANGE	Change
COMPLNT	Complaint
CONCERN	Concern
CONFDNC	Confidence
DEFEAT	Defeat
DSAPPNT	Disappointment
INFORM	Information-giving
JUDGMNT	Judgment
REQUEST	Request
RESIST	Resistance

*This type of teacher response may occur without an associated pupil behavior; that is, these names define responses to on-going patterns of student behavior which may not be observed during the actual observation period.

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TEACHER ACTIVITY LEXICON

INSTRUCTING

Abbreviation	Activity Name
ANSWER	Answering questions
AROUND	Around
ASKING	Asking questions
CHECK	Checking work
CRCULAT	Circulating
CORRECT	Correcting work
DEMONST	Demonstrating
DICTATE	Dictating
DISCUSS	Discussion leading
DRILL	Drilling
EXPLAIN	Explaining
HELP	Helping
INSTRCT	Instructing
INSTGIV	Instruction giving
LECTURE	Lecturing
LISTEN	Listening
MONITOR	Monitoring
READ TO	Reading to
EQUIP	Running equipment
SUPRVIS	Supervising
TALKTOP	Talking to pupil
TESTING	Testing

MANAGING

Abbreviation	Activity Name
ACADMNG	Academic managing
ARRANGE	Arranging room
ASSIGN	Assigning
COLLECT	Collecting materials
DISTRIB	Distributing materials
NONACAD	Nonacademic managing
PREPRNG	Preparing for instruction
REMIND	Reminding

CONTROLLING

Abbreviation	Activity Name
CLCNTRL	CLassroom controlling
DISCPLN	Disciplining
QUIET	Quieting
WAITING	Waiting

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MISCELLANEOUS

Abbreviation	Activity Name
AT DESK	At desk working
OUTROOM	Out of room
TALKTOA	Talking to adult
TRANS	Transitional

PUPIL ACTIVITY LEXICON

LANGUAGE ARTS ACTIVITIES

Abbreviation	Activity Name
CWRITE	Creative writing
DCTIONRY	Dictionary skills
DICTATN	Dictation
ENGLISH	English
GRAMMAR	Grammar
ORALREAD	Oral reading
PEN	Penmanship
PHONICS	Phonics
POETRY	Poetry
PUNCT	Punctuation
REDINSS	Readiness activities
READING	Reading
READCOMP	Reading comprehension
READGAME	Reading game
READWORK	Reading worksheet or workbook
REC READ	Recreational reading
SLT READ	Assigned silent reading
SPELL	Spelling
SPELLWRK	Spelling worksheet or workbook
SYLLABL	Syllabification
VOCAB	Word meaning
WRITING	Assigned writing

ACADEMIC ACTIVITIES other than language arts and mathematics

Abbreviation	Activity Name
ANTHRO	Anthropology
ART	Art
BOOK RPT	Book report
COLORS	Colors
EVENTS	Current events
DRAMA	Drama, play
ECOLOGY	Ecology
FILM	Film strip, movie
FOOD	Food study
GEOG	Geography
MAPS	Maps
OFFCMACH	Office machines
PHYS ED	Physical education
READER	Weekly reader
SCIENCE	Science
SHAPES	Shapes and forms
SOC STUD	Social studies

MATHEMATICS ACTIVITIES

Abbreviation	Activity Name
ADD	Addition
ADDSUB	Addition and subtraction
DECIM	Decimals
DIV	Division
FACTOR	Factoring
FRACT	Fractions
GEOM	Geometry
GRAPH	Graphing
MATH	Mathematics
MATHGAME	Mathematics game
MATHWORK	Mathematics worksheet, workbook
MEASURE	Measurement
MONEY	Money
MULT	Multiplication
MULTDIV	Multiplication and division
PERCENT	Percent, ratio, probability
RELATS	Relationships
SUB	Subtraction
STAT	Statistics (mean, median, etc.)
TIME	Time
WORDPROB	Word problems

SKILL DEVELOPMENT ACTIVITIES

Abbreviation	Activity Name
BLOCKS	Blocks
CLAP	Clapping
CLAY	Clay
COLOR	Coloring
COOK	Cooking
CRAFTS	Crafts
DANCE	Dancing
FREEPLAY	Freeplay
FREETIME	Freetime
GAMES	Games
MARCH	Marching
BODY MOV	Body movement
MUSIC	Music
PAINT	Painting
PLAY HSE	Playing house
RECORDS	Records
RHYTHM	Rhythm
SING	Singing
SPEECH	Speech
STORY	Story
TELLSTRY	Tell-a-story

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PUPIL ACTIVITIES

TRANSITIONAL ACTIVITIES

Abbreviation	Activity Name
TRANS	Transitional
CLEAN UP	Clean up
END DAY	End of the day
LINE UP	Line up
QUIET	Quiet
REST	Rest
SNACK	Snack, milk-time

OPENING ACTIVITIES

Abbreviation	Activity Name
PLEDGE	Pledge
ROLL	Roll-call
OPENING	Beginning of day activities
SHARING	Sharing

MISCELLANEOUS ACTIVITIES

Abbreviation	Activity Name
ADMIN	Filling out adminstrative forms
ANNOUNC	Listening to announcements
ASSEMBLY	Assembly
CONFRNC	Conference
DISCUSS	Discussion
DRILL	Fire drill, disaster drill
LIBRARY	Library
LUNCH	Lunch
PARTY	Party
RECESS	Recess

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Appendix B

APPLE Lexicon Terms and Numeric Codes

PUPIL BEHAVIOR LEXICON

ABILITY AND ACADEMIC PERFORMANCE

Abbreviation	Pupil Behavior Name	Numeric Code
ACAD PRFRMNC	Academic performance	101
APTITUDE	Aptitude	102
CNVRGNT PROD	Convergent production	103
DIVRGNT PROD	Divergent production	104
GNRL-KNOWLDG	General knowledge	105
INTERESTS	Interests	106
INTLCTL FUNC	Intellectual functioning	107
LANGUAGE	Language	108
LISTEN COMP	Listening comprehension	109
MEMORY	Memory	110
NMBR CONCPTS	Number concepts	111
ORAL READING	Oral reading	112
PHONIC SKILL	Phonic skill	113
READING COMP	Reading comprehension	114
READING VOCAB	Reading vocabulary	115
SHAPES-FORMS	Shapes and forms	116
TEST PRFRMNC	Test performance	117
VOCABULARY	Vocabulary	118

ORIENTATION TO INSTRUCTION

Abbreviation	Pupil Behavior Name	Numeric Code
ATTENTN SPAN	Attention span	201
ATTNTVNESS	Attentiveness	202
CALLSON	Leading the group	203
CHEATING	Cheating	204
COPYING	Copying	205
CORRECT		206
DRCTN-FLLWNG	Direction-following	207
DIV TACTICS	Diversionary tactics	208
EGRESS	Egress	209
ENGAGEMENT	Engagement	210
FINISHED	End of work, just waiting	211
NO RESPONSE	Not responding to teacher	212
PREPARE	Getting materials ready	213
PRTICIPATION	Participation	214
PUNCTUALITY	Punctuality	215
PUPIL HELP	Pupil help	216
PUPIL REQUEST	Pupil request	217
QUESTIONING	Questioning	218
RECORD		219
SCORE	Keeping score	220
SITTING BEH	Sitting behavior	221
SPEAKING	Talking	222
TALKING	Talking	223
VOLUNTEERING	Volunteering	224
WAITING	Waiting for teacher	225
WANDERING	Wandering	226
WITHDRAWL	Withdrawal	227
WORK HABITS	Work habits	228

PUPIL BEHAVIOR LEXICON (Cont'd)

INTERACTIONS

Abbreviation	Pupil Behavior Name	Numeric Code
AGGRESSION	Aggression	301
ANTI-SOC BEH	Anti-social behavior	302
ARGUE	Verbal bickering	303
ATN-GTNG BEH	Attention-getting behavior	304
BORROWS	Borrowing supplies, coat, etc.	305
CNTROLNG BEH	Controlling behavior	306
COMPETITION	Competition	307
CONFORMITY	Conformity	308
COOPERATION	Cooperation	309
DSRPTZ CNDCT	Disrupting conduct	310
FIGHTING	Fighting	311
IGNORE	Ignoring	312
LAUGH	Laughing	313
LOOKSAT	Looking (at another student)	314
MEDDLING	Meddling	315
MIMICKING	Mimicking	316
PHYS CONTACT	Physical contact	317
POSFEED	Mild verbal positive response	318
PUPIL LISTEN	Listening to another pupil	319
REASSURANCE	Reassurance	320
REQUEST	Request of another pupil	321
RIVALRY	Rivalry	322
SEXUAL BEHAV	Sexual behavior	323
SOCL RLTSHPS	Social relationships	324
TATTLING	Tattling	325
TEASING	Teasing	326

AFFECTIVE BEHAVIOR

Abbreviation	Pupil Behavior Name	Numeric Code
AFFECT	Affect	401
ANGER	Anger	402
BIZARRE BEH	Bizarre behavior	403
COMPLAINING	Complaining	404
CONDUCT	Conduct	405
CRYING	Crying	406
ENTHUSIASM	Enthusiasm	407
FACE	Making faces	408
FANTASY	Fantasy	409
FRUSTRATION	Frustration	410
GIGGLING	Giggling	411
HURT FEELING	Hurt feeling	412
IMPERTINENCE	Impertinence	413
NONE	Used for O.P. resp. only	414
PLAY	Playing	415
RESPONSVNESS	Responsiveness	416
SHARING	Sharing, looking at each others work	417
STOPS BEH	Ending behavior	418
SULKING	Sulking	419
TANTRUM	Tantrum	420
WHINING	Whining	421
WHISPERING	Whispering to another pupil	422
YELLING	Yelling	423

PUPIL BEHAVIOR LEXICON (Cont'd)

PERSONALITY TRAITS AND ATTITUDES

Abbreviation	Pupil Behavior Name	Numeric Code
ADJUSTMENT	Adjustment	501
ANXIETY	Anxiety	502
ATTITUDE	Attitude	503
DECISION-MAK	Decision-making	504
DEFENSIVNESS	Defensiveness	505
FEAR FAILURE	Fear of failure	506
INDEPENDENCE	Independence	507
MATURITY	Maturity	508
MOOD	Mood	509
NERVS HABITS	Nervous habits	510
PERSONALNEED	Bathroom, blowing nose, drink	511
PRSNL CHRACT	Personality characteristics	512
PRSNLTY TYPE	Personality type	513
POSSESSIONS	Possessions	514
RESPONSIBLTY	Responsibility	515
SELF-AWARNSS	Self-awareness	516
SELF-CONCEPT	Self-concept	517
SEX ATTITUDE	Sex attitude	518
SHYNESS	Shyness	519

PHYSICAL CHARACTERISTICS AND ACTIVITY

Abbreviation	Pupil Behavior Name	Numeric Code
ACTIVTY LEVL	Activity level	601
ATTIRE	Attire	602
AUTO-EROTIC	Auto-erotic behavior	603
EATING BEHAV	Eating behavior	604
FATIGUE	Fatigue	605
HANDEDNESS	Handedness	606
HEARING	Hearing	607
HUNGER	Hunger	608
IMPLS CONTRL	Impulse control	609
MOTOR BEHAV	Motor behavior	610
NEURO FACTRS	Neurological factors	611
PHYS APPRNC	Physical appearance	612
RESTLESSNESS	Restlessness	613
SLEEP BEHAV	Sleep behavior	614
SUCKING BEH	Sucking behavior	615
TOILET BEHAV	Toilet behavior	616
VISION	Vision	617
VIS-MOT ORG	Visual-motor organization	618

PUPIL BEHAVIOR LEXICON (Cont'd)

HEALTH AND ILLNESS

Abbreviation	Pupil Behavior Name	Numeric Code
ATTENDANCE	Attendance	701
HOSPITLIZATN	Hospitalization	702
ILLNESS	Illness	703
INJURY	Injury	704
MED HISTORY	Medical history	705
MED TREATMT	Medical treatment	706
MEDICATION	Medication	707
PHYS COMPLNT	Physical complaint	708
PHYS CONDITN	Physical condition	709

FAMILY HISTORY AND CHARACTERISTICS

Abbreviation	Pupil Behavior Name	Numeric Code
ADOPTION	Adoption	801
ALCOHOLISM	Alcoholism	802
EDUC HISTORY	Educational history	803
FAMLY BACKGD	Family background	804
FAMLY CONCPT	Family concept	805
FAMLY DEATH	Death in family	806
FAMLY STUATN	Family situation	807
FMLY CNSTLTN	Family constellation	808
FMLY RLTSHPS	Family relationships	809
FOREIGN LANG	Foreign language	810
MARTL SPRATN	Marital separation	811
MARTL STATUS	Marital status	812
OCCUPATION	Occupation	813
OVER PROTCTN	Over protection	814
PARNT REQUEST	Parent request	815
PARNTL PRSSR	Parental pressure	816
RACE	Race	817
REJECTION	Rejection	818
SCHL SUPPORT	School support	819

ADMINISTRATIVE-OTHER

Abbreviation	Pupil Behavior Name	Numeric Code
AID TEACHER	Helping the teacher	901
OBSVR JUDGMNT	Observer judgment	902
REFERRAL	Referral	903
SCHEDULING	Scheduling	904

ANTECEDENT TEACHER BEHAVIOR

ELICITING

Abbreviation	Response Name	Numeric Code
ASKING	Asking	101
CALLSON	Calls on student	102
REQUEST	Request	103

INSTRUCTING

Abbreviation	Response Name	Numeric Code
AFFECT	Affect	204
ANSWER	Answering	205
ASSIGN	Assigning	206
BOARD	Writing on board	207
CHECK	Checking	208
CONCERN	Concern	209
CORRECT	Correcting	210
CRCULAT	Circulating	211
DEMONST	Demonstrating	212
DICTATE	Dictating	213
DISCUSS	Discussion leading	214
DRILL	Drilling	215
EXPLAIN	Explaining	216
HELP	Helping	217
INFORM	Information-giving	218
INSTGIV	Instruction-giving	219
INSTRCT	Instructing	220
LECTURE	Lecturing	221
MONITOR	Monitoring	222
MOVESON	Moves on	223
PRTICIP	Participating as a student	224
READ TO	Reading to	225
RECORD	Recording scores	226
REVIEW	Reviewing material	227
SHARING		228
TALKTOP	Talking to pupil	229
TESTING	Testing	230

MANAGING

Abbreviation	Response Name	Numeric Code
ACADMNG	Academic managing	331
ANNOUNC		332
ARRANGE	Arranging room	333
CLCNTRL	Classroom controlling	334
COLLECT	Collecting materials	335
DISTRIB	Distributing materials	336
INTRVEN	Intervention	337
MNAGMNT	Management	338
NONACAD	Nonacademic managing	339
PREPRNG	Preparing for instruction	340
REMIND	Reminding	341
SEATING	Seating	342
SUPRVIS	Supervising	343

ANTECEDENT TEACHER BEHAVIOR (Cont'd)

POSITIVE RESPONSE

Abbreviation	Response Name	Numeric Code
ENCRGMT	Encouragement	444
PERMITS	Permits	445
POSFEED	Positive feedback	446
PRAISE	Praise	447
REWARD	Reward	448
PHYS RE	Physical reward	449

NEUTRAL RESPONSE

Abbreviation	Response Name	Numeric Code
IGNORE	Ignoring	550
NOFEED	No feedback	551
RECGNIZ	Recognizing	552
REDRECT	Redirection	553
QUIET	Quieting	554
WAITING	Waiting	555

NEGATIVE RESPONSE

Abbreviation	Response Name	Numeric Code
CRTICSM	Criticism	656
DISCPLN	Discipline	657
NEGFEED	Negative feedback	658
RPRIMND	Reprimand	659
WARNING	Warning	660

MISCELLANEOUS

Abbreviation	Response Name	Numeric Code
AT DESK	At desk working	761
EQUIP	Runing equipment	762
OUTROOM	Out of room	763
TALKTOA	Talking to adult	764
TRANS	Transitional	765

TEACHER RESPONSE LEXICON

INSTRUCTING

Abbreviation	Response Name	Numeric Code
ANSWER	Answering	101
ASKING	Asking	102
ASSIGN	Assigning	103
CALLSON	Calls on student	104
CHECK	Checking	105
CORRECT	Correcting	106
EXPLAIN	Explaining	107
HELP	Helping	108
INSTGIV	Instruction giving	109
INSTRCT	Instructing	110
MOVESON	Moves on	111
RECORD	Recording scores	112

POSITIVE

Abbreviation	Response Name	Numeric Code
ENCRGMT	Encouragement	213
PERMITS	Permits	214
PHYS RE	Physical reward	215
POSFEED	Positive feedback	216
PRAISE	Praise	217
REWARD	Reward	218

NEUTRAL

Abbreviation	Response Name	Numeric Code
LOOKSAT		319
NOFEED	No feedback	320
NONE	None	321
RECGNIZ	Recognizing	322

NEGATIVE

Abbreviation	Response Name	Numeric Code
CRTICSM	Criticism	423
NEGFEED	Negative feedback	424
REFUSES	Refuses	425
WARNING	Warning	426

TEACHER RESPONSE LEXICON (Cont'd)

MANAGING

Abbreviation	Response Name	Numeric Code
DISCPLN	Discipline	527
IGNORE	Ignoring	528
INTRVEN	Intervention	529
MEDIATN	Mediation	530
MNAGMNT	Management	531
PHYSPUN	Physical punishment	532
REDRECT	Redirection	533
REMIND	Reminding students	534
RPRIMND	Reprimand	535
SEATING	Seating	536

RESPONSES TO PUPIL FEELINGS

Abbreviation	Response Name	Numeric Code
ACCEPT	Acceptance	637
INHIBIT	Inhibition of communication	638
LAUGH		639

ATTITUDES*

Abbreviation	Response Name	
AFFECT	Affect	740
CHANGE	Change	741
COMPLNT	Complaint	742
CONCERN	Concern	743
CONFDNC	Confidence	744
DEFEAT	Defeat	745
DSAPPNT	Disappointment	746
INFORM	Information-giving	747
JUDGMNT	Judgment	748
REQUEST	Request	749
RESIST	Resistance	750

*This type of teacher response may occur without an associated pupil behavior; that is, these names define responses to on-going patterns of student behavior which may not be observed during the actual observation period.

TEACHER ACTIVITY LEXICON

INSTRUCTING

Abbreviation	Activity Name	Numeric Code
ANNOUNC		101
ANSWER	Answering questions	102
AROUND	Around	103
ASKING	Asking questions	104
BOARD	Writing on board	105
CALLSON	Asking student to desk	106
CHECK	Checking work	107
CORRECT	Correcting work	108
CRCULAT	Circulating	109
DEMONST	Demonstrating	110
DICTATE	Dictating	111
DISCUSS	Discussion leading	112
DRILL	Drilling	113
EQUIP	Running equipment	114
EXPLAIN	Explaining	115
HELP	Helping	116
INSTGIV	Instruction giving	117
INSTRCT	Instructing	118
LECTURE	Lecturing	119
LISTEN	Listening	120
MONITOR	Monitoring	121
PRTICIP	Participating as a student	122
READ TO	Reading to	123
SUPRVIS	Supervising	124
TALKTOP	Talking to pupil	125
TESTING	Testing	126

MANAGING

Abbreviation	Activity Name	Numeric Code
ACADMNG	Academic managing	227
ARRANGE	Arranging room	228
ASSIGN	Assigning	229
COLLECT	Collecting materials	230
DISTRIB	Distributing materials	231
NONACAD	Nonacademic managing	232
PREPRNG	Preparing for instruction	233
REMIND	Reminding	234
REVIEW	Reviewing material	235

TEACHER ACTIVITY LEXICON (Cont'd)

CONTROLLING

Abbreviation	Activity Name	Numeric Code
CLCNTRL	Classroom controlling	336
DISCPLN	Disciplining	337
RPRIMND	Reprimanding students	338
QUIET	Quieting	339
WAITING	Waiting	340

MISCELLANOUS

Abbreviation	Activity Name	Numeric Code
AT DESK	At desk working	441
OUTROOM	Out of room	442
READING	Silent reading at desk	443
RECORD	Recording scores	444
TALKTOA	Talking to adult	445
TRANS	Transitional	446

PUPIL ACTIVITY LEXICON

LANGUAGE ARTS ACTIVITIES

Abbreviation	Activity Name	Numeric Code
CWRITE	Creative writing	101
DCTIONRY	Dictionary skills	102
DICTATN	Dictation	103
ENGLISH	English	104
GRAMMAR	Grammar	105
LANG ART		106
ORALREAD	Oral reading	107
OUTLINE	English outline	108
PEN	Penmanship	109
PHONICS	Phonics	110
POETRY	Poetry	111
PUNCT	Punctuation	112
READING	Reading	113
READCOMP	Reading comprehension	114
READGAME	Reading game	115
READWORK	Reading worksheet or workbook	116
REC READ	Recreational reading	117
REDINSS	Readiness activities	118
SLT READ	Assigned silent reading	119
SPELL	Spelling	120
SPELLING	Spelling	121
SPELLWRK	Spelling worksheet or workbook	122
SYLLABL	Syllabification	123
VOCAB	Word meaning	124
WRITING	Assigned writing	125

ACADEMIC ACTIVITIES
(Other than language arts and mathematics)

Abbreviation	Activity Name	Numeric Code
ANTHRO	Anthropology	201
ART	Art	202
BOOK RPT	Book report	203
COLORS	Colors	204
COMCATN	Communications, role playing	205
DRAMA	Drama, play	206
ECOLOGY	Ecology	207
EVENTS	Current events	208
FILM	Film strip, movie	209
FOOD	Food study	210
FOR LANG	Foreign language	211
GEOG	Geography	212
HEALTH	Health	213
MAPS	Maps	214
OFFCMACH	Office machines	215
ORAL RPT		216
PHYS ED	Physical education	217
READER	Weekly reader	218
SCIENCE	Science	219
SHAPES	Shapes and forms	220
SOC STUD	Social studies	221

PUPIL ACTIVITY LEXICON (Cont'd)

MATHEMATICS ACTIVITIES

Abbreviation	Activity Name	Numeric Code
ADD	Addition	301
ADDSUB	Addition and subtraction	302
DECIM	Decimals	303
DIV	Division	304
FACTOR	Factoring	305
FRACT	Fractions	306
GEOM	Geometry	307
GRAPH	Graphing	308
MATH	Mathematics	309
MATHGAME	Mathematics game	310
MATHTEST		311
MATHWORK	Mathematics worksheet, workbook	312
MEASURE	Measurement	313
MONEY	Money	314
MULT	Multiplication	315
MULTDIV	Multiplication and division	316
PERCENT	Percent, ratio, probability	317
RELATS	Relationships	318
STAT	Statistics (mean, median)	319
SUB	Subtraction	320
TIME	Time	321
WORDPROB	Word problems	322

SKILL DEVELOPMENT ACTIVITIES

Abbreviation	Activity Name	Numeric Code
BLOCKS	Blocks	401
BODY MOV	Body movement	402
CLAP	Clapping	403
CLAY	Clay	404
COLOR	Coloring	405
COOK	Cooking	406
CRAFTS	Crafts	407
DANCE	Dancing	408
FREEPLAY	Freeplay	409
FREETIME	Freetime	410
GAMES	Games	411
MARCH	Marching	412
MUSIC	Music	413
PAINT	Painting	414
PLAY HSE	Playing house	415
RECORDS	Records	416
RHYTHM	Rhythm	417
SING	Singing	418
SPEECH	Speech	419
STORY	Story	420
TELLSTRY	Tell-a-story	421

PUPIL ACTIVITY LEXICON (Cont'd)

TRANSITIONAL ACTIVITIES

Abbreviation	Activity Name	Numeric Code
CLEAN UP	Clean up	501
END DAY	End of the day	502
LINE UP	Line up	503
QUIET	Quiet	504
REST	Rest	505
SNACK	Snack, milk-time	506
TRANS	Transitional	507

OPENING ACTIVITIES

Abbreviation	Activity Name	Numeric Code
PLEDGE	Pledge	601
ROLL	Roll-call	602
OPENING	Beginning of day activities	603
SHARING	Sharing	604

MISCELLANEOUS ACTIVITIES

Abbreviation	Activity Name	Numeric Code
ADMIN	Filling out administrative forms	701
ANNOUNC	Listening to announcements	702
ASSEMBLY	Assembly	703
AWARDS		704
CAT TEST		705
CONFRNC	Conference	706
DISCUSS	Discussion	707
DRILL	Fire drill, disaster drill	708
FIELDTRP		709
HOMEROOM		710
INDSTUDY	Independent study	711
LIBRARY	Library	712
LUNCH	Lunch	713
PARTY	Party	714
RECESS	Recess	715
SCORE	Keeping score	716
TEST		717

Appendix C

Year Two Observation Sheets and Scheduling Calendar

APPLE Observation Form

Time	Subject Matter	Observer	Date	Teacher	School	Page	Cycle	Teacher	Observer

Code	Context	Group Size	Context Time

Teacher Activity:

Pupil Activity:

Observed Pupil				Antecedent Teacher Behavior	Antecedent Pupil Behavior			Event	Teacher Response	Other Pupil Response			
B	C	T	O	None NA	B	C	X	None NA	+ 0 -	+ 0 -	None NA	B	C	X	None NA	+ 0 -

Ante. Teacher Behavior:

Ante. Pupil Behavior:

Descrip. of Event:

Teacher Response:

Other Pupil Response:

Code	Context	Group Size	Context Time

Teacher Activity:

Pupil Activity:

Observed Pupil				Antecedent Teacher Behavior	Antecedent Pupil Behavior			Event	Teacher Response	Other Pupil Response			
B	C	T	O	None NA	B	C	X	None NA	+ 0 -	+ 0 -	None NA	B	C	X	None NA	+ 0 -

Ante. Teacher Behavior:

Ante. Pupil Behavior:

Descrip. of Event:

Teacher Response:

Other Pupil Response:

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Observer _____

Teacher Observed _____ School _____

Date Observed _____ Cycle _____

OBSERVER DAILY LOG

-Periods- Observing Times	Duration # Minutes	Subject(s)	Boys Observed	Girls Observed	% Home-Room	Observation Page #s	Comments

TOTAL _____

BOYS	Name	ID Code	Race	Description	GIRLS	Name	ID Code	Race	Description
Target 1					Target 1				
Target 2					Target 2				
Target 3					Target 3				
Alternate					Alternate				
Other Boy 1					Other Girl 1				
Other Boy 2					Other Girl 2				
Other Boy 3					Other Girl 3				
Other Boy 4					Other Girl 4				

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ETS-NIE Study of Classroom Interaction
Proposed Schedule

MARCH

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
2	3	4 OBSERVATION T-57 (2)-Alvarez	5 OBSERVATION T-63 (3)-Pomykal T-64 (3)-Russo T-58 (3)-Maciaszek T-59 (3)-Alvarez ALT: T-62 (3) T-55 (3)	6
9	10	11 OBSERVATION T-53 (3)-Russo T-54 (3)-Maciaszek T-61 (3)-Alvarez T-60 (3)-Pomykal ALT: T-57 (3) T-56 (3)	12 OBSERVATION T-56 (3)-Pomykal T-55 (3)-Russo T-51 (3)-Alvarez T-52 (3)-Maciaszek ALT: T-59 (4) T-58 (4)	13
16	17 OBSERVATION T-62 (3)-Maciaszek T-57 (3)-Alvarez T-59 (4)-Russo T-58 (4)-Pomykal ALT: T-61 (4) T-60 (4)	18	19 OBSERVATION T-56 (4)-Alvarez T-55 (4)-Pomykal T-57 (4)-Russo T-64 (4)-Maciaszek ALT: T-63 (4) T-54 (4)	20
23	24 OBSERVATION T-63 (4)-Russo T-62 (4)-Alvarez T-53 (4)-Pomykal T-54 (4)-Maciaszek ALT: T-51 (4) T-52 (4)	25 OBSERVATION T-61 (4)-Maciaszek T-60 (4)-Russo T-51 (4)-Pomykal T-52 (4)-Alvarez ALT: T-64 (5) T-53 (5)	26	27
30	31			NOTE: The number in parentheses following a teacher's name refers to the number of times he or she has been observed.

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Appendix D

Frequency of Year One Student Behaviors

Frequencies of Pupil Behavior Events for Original Lexicon Terms and Aggregated Frequencies for Newly Created Composite Event Terms

Category of Event	Aggregated Raw Frequency	Unchanged Original or Composite Pupil Event Terms	Raw Frequency of Original Lexicon Term	Original Lexicon Term Used to Compose the Composite Terms
Ability and Academic Performance	1347	Academic Performance	1317	Academic Performance
			2	General Knowledge
			3	Intellectual Functioning
			8	Listening Comprehension
			7	Number Concepts
			7	Phonic Skill
			1	Reading Comprehension
			1	Reading Vocabulary
			1	Vocabulary
	55	Convergent Production		
	27	Divergent Production		
	106	Oral Reading		
Orientation to Instruction	38	Attention Span		
	2686	Attentiveness		
	40	Cheating		
	46	Copying		
	1057	Direction-Following		
	75	Diversionary Tactics		
	2723	Engagement		
	163	Egress		
	1597	Participation		
	805	Questioning		
	291	Sitting Behavior		
	178	Pupil Help		
	179	Pupil Request		

Category of Event	Aggregated Raw Frequency	Unchanged Original or Composite Pupil Event Terms	Raw Frequency of Original Lexicon Term	Original Lexicon Term Used to Compose the Composite Terms
	2382	Talking	2367	Talking
			15	Speaking
	63	Volunteering		
Orientation	106	Wandering		
to	64	Withdrawal		
Instruction	2117	Work Habits		
(Cont'd.)	35	Calls On *		
	232	Finished *		
	42	No response *		
	323	Prepare *		
	276	Waiting *		
	70	Aggression	55	Aggression
			14	Fighting
			1	Anti-social Behavior
	200	Attention Getting Behavior		
	38	Competition	37	Competition
			1	Rivalry
Interactions	43	Controlling Behavior		
	250	Cooperation		
	175	Disruptive Conduct		
	65	Meddling		
	92	Teasing	78	Teasing
			14	Mimicking
	51	Physical Contact		
	42	Reassurance		
	122	Social relationships		
	26	Tattling		

* New Lexicon Term

Category of Event	Aggregated Raw Frequency	Unchanged Original or Composite Pupil Event Terms	Raw Frequency of Original Lexicon Term	Original Lexicon Term Used to Compose the Composite Terms
	38	Argue *		
	33	Borrows *		
Interactions	262	Laugh *		
(Cont'd.)	516	Looks at *		
	21	Positive Feedback *		
	94	Pupil Listen *		
	52	Pupil Request *		
	618	Sharing *		
	342	Whispering *		
	491	Affect		
	32	Anger		
	30	Bizarre Behavior		
	63	Complaining		
	365	Conduct		
	70	Anxiety	5	Crying
			16	Frustration
			4	Anxiety
			5	Defensiveness
Affective			8	Fear of Failure
Behavior			7	Independence (Neg.)
			17	Self Concept (Neg.)
			8	Shyness
	24	Independence	7	Independence (Pos.)
			17	Self Concept (Pos.)
	76	Enthusiasm		
	72	Giggling		
	12	Negative Affect	8	Sulking
			2	Hurt Feeling
			1	Tantrum
			1	Whining

* New Lexicon Term

Category of Event	Aggregated Raw Frequency	Unchanged Original or Composite Pupil Event Terms	Raw Frequency of Original Lexicon Term	Original Lexicon Term Used to Compose the Composite Terms
	39	Impertinence		
	462	Responsiveness		
Affective	40	Yelling		
Behavior	100	Face *		
(Cont'd.)	468	Play *		
	107	Stops Behavior *		
	437	Nervous Habits	287	Nervous Habits
			56	Sucking
			94	Restlessness
	28	Possessions		
Other		Fatigue	67	Fatigue
			3	Sleep Behavior
	27	Physical Appearance	10	Physical Appearance
			17	Attire
	133	Scheduling		
	184	Personal Need		
	204	Aid Teacher *	201	Aid Teacher *
			3	Score

*. New Lexicon Term

Appendix E

Infrequent Behaviors

Infrequent or Nonoccuring APPLE Pupil
Behavior Lexicon Terms

Infrequently Occurring Event Terms	Raw Frequency of Occurence	Nonoccuring Event Terms
Handedness	19	Maturity
Motor-Behavior	18	Mood
Punctuality	6	Adjustment
Illness	6	Memory
Physical Complaint	6	Aptitude
Respnsibility	4	Shapes & Forms
Visual-Motor Organization	4	Personality Characteristics
Interests	3	Personality Type
Activity Level	3	Auto-Erotic Behavior
Attendance	3	Hearing
Medical Treatment	2	Impulse Control
Sexual Behavior	1	Neurological Factors
Fantasy	1	Toilet Behavior
Attitude	1	Vision
Decision Making	1	Hospitalization
Self-Awareness	1	Medical History
Sex Attitude	1	Medication
Conformity	1	Adoption
Eating Behavior	1	Alcoholism
Hunger	1	Educational History
Family Background	1	Family Concept
Family Situation	1	Family Death
Parent Request	1	Family Constellation
		Family Relationships
		Foreign Language
		Marital Separation
		Marital Status
		Occupation
		Over Protection
		Parental Pressure
		Race
		Rejection
		School Support
		Observer Judgement
		Referral

Appendix F

Preliminary Frequencies and Relative Frequencies

for the Twenty Most Frequently Occurring Context Codes

Preliminary Frequencies and Relative Frequencies (Percentages) for the Twenty Most Frequently Occuring Context Codes

Context Code	Absolute Frequency	Relative Frequency* (Percentage)	Explanation of Context Code
TCCC	9,463	40.22	Teacher is leading the whole class. Whole class is working in same subject matter area. Whole class has same assignment. Class is functioning as a unit, including observed student.
ICCI	5,341	22.70	Work is independent of adult leadership. Every student in the class is working in the same subject matter area. Whole class has the same assignment. The observed student is working independently of anyone else.
ICGI	1,539	6.54	Work is independent of adult leadership. Every student in the class is working in the same subject matter area. Different groups have different assignments. The observed student is working independently of anyone else.
IGGI	843	3.58	Observed student is working indpendently of teacher's leadership. Observed student is working in the same subject matter area as several other students. Each group in the class has a different assignment. Observed student is working alone.
TCGX	710	3.02	Teacher is leading the whole class. Whole class is working in same subject matter area. Each group in the class has a different assignment. The target student is in a mixed or cross sex group (pairs are groups).
UCCC	572	2.45	Teacher(s) other than the homeroom teacher are in charge. Whole class is working in same subject matter area. Whole class is doing same activity. Class is working together as a unit.
ICCC	496	2.01	Observed student is working independently of teacher's leadership. Whole class is working in same subject matter area. Whole class has same assignment. Class is functioning as a unit, including observed student.

*Total number of events across all context codes was 23,526.

Preliminary Frequencies and Relative Frequencies (Percentages) for the Twenty Most Frequently Occuring Context Codes (cont.)

Context Code	Absolute Frequency	Relative Frequency* (Percentage)	Explanation of Context Code
TCCI	486	2.07	Teacher is leading the whole class. Whole class is working in same subject matter area. Whole class has same assignment. Observed student is working alone.
ICII	476	2.02	Observed student is working independently of teacher's leadership. Whole class is working in same subject matter area. Observed student's assignment is unique. Observed student is working alone.
IIII	281	1.19	Observed student is working independently of teacher's leadership. His/her subject matter is different from anyone else in class. His/her assignment is therefore different. Observed student is working alone.
TGGX	281	1.19	Teacher is working with observed student. Observed student is working in the same subject matter area as several other students. Each group in the class has a different assignment. The target student is in a mixed or cross sex group (pairs are groups).
IICI	273	1.16	Observed student is working independently of teacher's leadership. His/her subject matter is different from anyone else's in class. Whole class has the same assignment. The observed student is working independently of anyone else.
ICGX	239	1.02	Work is independent of adult leadership. Every student in the class is working in the same subject matter area. Different groups have different assignments. The target student is in a mixed sex group or pair.
TCGI	209	.89	The teacher is leading a group of which the observed student is a member. Class is working in same subject area. Each group in the class has a different assignment. Observed student is working alone.

Preliminary Frequencies and Relative Frequencies (Percentages) for the Twenty Most Frequently Occuring Context Codes (cont.)

Context Code	Absolute Frequency	Relative Frequency* (Percentage)	Explanation of Context Code
SCCC	133	.57	A substitute is leading the whole class. Whole class is working in same subject matter area. Whole class has same assignment. Class is functioning as a unit, including observed student.
ICGB	128	.54	Observed student is working independently of teacher's leadership. Whole class is working in same subject matter area. Each group in the class has a different assignment. Observed student is part of a group of boys that are working together.
ACCC	126	.54	Another adult (aide, principal, etc.) is leading the whole class. Whole class is working in same subject matter area. Whole class has same assignment. Class is functioning as a unit, including observed student.
TCGG	120	.51	The teacher is leading a group of which the observed student is a member. Class is working in same subject area. Each group in the class has a different assignment. Observed student is part of a group of girls that are working together.
ICGG	115	.49	Observed student is working independently of teacher's leadership. Class is working in same subject area. Each group in the class has a different assignment. Observed student is part of a group of girls that are working together.
IIGI	110	.47	Observed student is working independently of teacher's leadership. His/her subject matter is different. Each group in the class has a different assignment. Observed student is working alone.

Appendix G

Student Descriptive Questionnaire and Instructions

CLASS ROSTER AND STUDENT DESCRIPTIVE QUESTIONNAIRE 1

TEACHER* Circle one number

01 B	12 M	58 B
02 C	15 T	59 S
06 D	51 P	60 B
08 G	53 H	62 T
09 G	54 R	63 R
10 L	56 W	64 N

SCHOOL* Circle one number

01 F	51 B	54 P
02 M	52 R	55 C
03 N	53 Z	56 S

To the Teacher:

The following information will be used for analytic purposes. Please supply the following information for each child in your homeroom class. PLEASE PRINT

1. Name _____ , _____ ___ ___ ___
   (Last) (First) (for office use only)

2. Nickname of child, if any. _____

3. Grade: Circle one number.

   3 = Third
   4 = Fourth
   5 = Fifth
   6 = Sixth

4. Sex: Circle one number.

   1 = Male
   2 = Female

5. Racial or ethnic group: Circle one number.

   1 = American Indian or Alaskan native
   2 = Black or Afro-American or Negro
   3 = Mexican-American or Chicano
   4 = Oriental or Asian-American or Pacific Islander
   5 = Puerto Rican
   6 = White or Caucasian
   7 = Multi-ethnic
   8 = Other, please specify _____

* names deleted to preserve anonymity

PLEASE COMPLETE BOTH SIDES

6. Does this child speak English as well as most of the other children in his or her class? Circle one number.

   1 = Yes, monolingual English
   2 = Yes, bilingual English and another language
   3 = No, please explain _____

7. What is this child's reading level, in comparison with the other children in his or her homeroom class? Circle one number.

   1 = One of the seven best readers in his or her homeroom
   2 = An average reader
   3 = One of the seven least able readers

   Note: In making this judgment, you may wish to refer to your class roster. Any student who is neither one of the top readers nor one of the least able readers is to be considered "Average."

Please return this survey to the ETS research representative, Abigail Harris or Meredith Stone, in the enclosed envelope as per the instructions in the cover letter. Thank you.

880.01
9/11/81

Instructions for Completing Class Roster and
Student Descriptive Questionnaire 2

1. Please review this class roster for completeness and accuracy.

   - o Delete the names of children no longer in your homeroom class
   - o Add the names of children new to your homeroom class
   - o Check the spelling of your students' names and nicknames and make necessary corrections
   - o Check the correctness of the students' grade, sex, ethnicity and language usage code, using the following key:

Grade (GRADE)

3 = Third
4 = Fourth
5 = Fifth
6 = Sixth

Sex (SEX)

1 = Male
2 = Female

Racial or ethnic group (ETHNICITY)

1 = American Indian or Alaskan native
2 = Black or Afro-American or Negro
3 = Mexican-American or Chicano
4 = Oriental or Asian-American or Pacific Islander
5 = Puerto Rican
6 = White or Caucasian
7 = Multi-ethnic
8 = Other, please specify_____

English language proficiency (LANGUAGE)

1 = Monolingual English
2 = Bilingual-English and another language
3 = Other_____

2. Please complete the student descriptive questionnaire as follows:

HANDICAP - Please circle PHY, EMOT and/or ED, as appropriate to indicate which children in your class have a physical, emotional or educational handicap. Use the following criteria as a guideline for identifying those that should be designated. Also, please explain briefly the nature/extent of the handicapping condition(s) on the back of the roster for your class.

PHY: - Indicate any children who have a physical handicap that interferes with regular communication and/or mobility in the classroom or that would require special administration procedures for assessment materials such as those that were used last year for this project.

EMOT: - Indicate any children whose emotional maturity and/or social sensitivity inhibits their effective participation in the classroom.

ED: - Indicate those children who have been classified as educationally handicapped (according to Public Law 94 142) and are pulled out of class regularly for special instruction.

LUNCH PROGRAM - Please circle TL, PART, NO or DK, as appropriate, to indicate for each child the extent of his or her participation in a subsidized school program:

TL = total subsidy
PART = partial subsidy
NO = no participation
DK = don't know

BIRTHDATE - Indicate each child's birth date _____ (month) _____ (day) _____ (year)

% Time - Indicate the approximate percentage of class time weekly that you are responsible for instructing this child?

Reading - Circle the "R" in this column after the name of each child in your reading class.

Math - Circle the "M" in this column after the name of each child in your math class.

Appendix H

Classroom Activities Questionnaire and Instructions

CLASSROOM ACTIVITIES QUESTIONNAIRE

ADMINISTRATION MANUAL

To NIE-ETS SECI Survey Administrators:

This administration manual is provided for your convenience and to insure standard administration conditions at all research sites. Please follow it carefully.

INSTRUCTIONS

Before you begin, please be certain that:

1. The children are seated with space between their desks.
2. All of the children can hear you.
3. Each child has a number 2 pencil.

This questionnaire is divided into two sections. Part I covers questions 1 - 36; Part II covers questions 39 - 75.

It is recommended that the questionnaire be administered in two sessions on the same day. Collect answer sheets and questionnaire books at the end of the first section. Then distribute the materials needed for the second section after a recess of at least five minutes.

It is important that there be as few distractions as possible during the testing session in order that students may give their full attention to answering the questions. Because this is not a reading test, you are to read the questions to students who request help with reading.

In the following paragraphs, instructions that are to be read aloud to students are printed in CAPITALS. Instructions printed in regular type are intended only for the test administrator.

When the students are seated and after you have made introductory remarks, say: I WILL HAND OUT THE TESTING MATERIALS. DO NOT OPEN YOUR QUESTIONNAIRE BOOK OR TURN IT OVER UNTIL YOU ARE TOLD TO DO SO.

Distribute answer sheets, pencils if needed, and questionnaire books to each student according to the preprinted label on the book.

Then say: BE CAREFUL HOW YOU HANDLE THE ANSWER SHEET. DO NOT FOLD IT OR BEND THE CORNERS. KEEP IT AS CLEAN AS POSSIBLE. MAKE NO MARKS ON IT UNTIL I TELL YOU TO.

Have students check to see if their name is printed on the label attached to the front of the questionnaire book. Any student who does not have a questionnaire with a preprinted label should be given one of the extra books. They should write or print their name on the outside of the book.

Instruct the students to turn their answer sheets so that the identification area is properly positioned. Demonstrate. Have students print or write the necessary identification on their answer sheets: name, school name, city, and date. When this has been done, ask the students to print either their last name or the first twelve letters of their last name in the boxes below the word "last" --one letter in each box. Ask them to print their first name or the first six letters of their first name in the boxes below the word "first".

The students are then to grid their names in the machine-readable columns below the letters they have printed. To help them do this, tell them to look at the first letter of their last name and to find the same letter in the column below it. Then, when they have found the letter, to blacken the oval space containing it. This procedure is followed for each column below each box containing a letter.

When the students have gridded their names, they are to print their identifying code number in the six boxes over the machine-readable columns directly to the left of their name. Their identifying code number may be found on the pre-printed label on the questionnaire book. Have the students print the first number of their code directly under the arrow and complete the code--one number in each box. Then they are to grid their code in the same manner--that is, by looking at the number in the box and blackening the corresponding oval.

When the identifying information has been properly gridded, say: READ THE DIRECTIONS ON THE FRONT COVER OF THE TEST BOOK WHILE I READ THEM ALOUD.

Read aloud the general directions from the cover of the test book. Then say: ARE THERE ANY QUESTIONS?

Answer any legitimate questions and proceed. Say: OPEN YOUR TEST BOOK TO THE PAGE WHERE THE DIRECTIONS FOR THE QUESTIONNAIRE ARE AND FOLD YOUR BOOK BACK SO THAT ONLY THE DIRECTIONS AND EXAMPLES SHOW - LIKE THIS.

Demonstrate by holding your book folded in the correct way. Say: READ THE DIRECTIONS SILENTLY WHILE I READ THEM ALOUD.

Read the direction and discuss the example(s) as necessary. Then ask: ARE THERE ANY QUESTIONS?

Answer any legitimate questions. Stay within the meaning and, as far as possible, the exact wording of the printed directions.

When the questions are answered, instruct the students to turn their answer sheets so that the number on the answer sheet corresponding to the questions in the book are in a vertical position. Demonstrate.

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Then say: BE SURE THAT THE NUMBER OF THE ROW ON THE ANSWER SHEET IS THE SAME AS THE NUMBER OF THE QUESTION YOU ARE ANSWERING BEFORE YOU MAKE AN ANSWER. IF YOU SKIP AN ITEM IN THE QUESTIONNAIRE, REMEMBER TO SKIP THE ANSWER ROW FOR THE ITEM ON YOUR ANSWER SHEET. WHEN YOU HAVE ANSWERED QUESTION 38, STOP AS INSTRUCTED IN THE BOOKLET. YOU MAY GO BACK AND CHECK YOUR ANSWERS TO QUESTIONS IN PART ONE. DO NOT BEGIN PART TWO UNTIL YOU ARE TOLD TO DO SO. YOU WILL HAVE 20 MINUTES TO ANSWER THE QUESTIONS IN PART ONE. IF YOU CANNOT READ A WORD ON THE QUESTIONNAIRE, PLEASE RAISE YOUR HAND AND I WILL COME AND READ IT TO YOU. TURN TO THE FIRST QUESTION. BEGIN.

During the administration, you should move quietly about the room to see that each student is working on the proper page of his or her book and that he or she is marking his or her answers correctly in the proper area of the answer sheet. Be sure to watch for children's hands raised. This is not a reading test!

At the end of 20 minutes, say: STOP, EVEN IF YOU ARE NOT FINISHED YOU MUST LAY DOWN YOUR PENCIL. PLACE YOUR ANSWER SHEET ON TOP OF THE PAGE YOU JUST FINISHED IN THE QUESTIONNAIRE BOOK. THEN CLOSE YOUR BOOK.

Collect answer sheets and test books and write down for the record a description of any unexpected variations from the normal testing procedure that may have occurred. Give the students a recess of at least five minutes.

* * *

When the students have returned to their desks, pass out the questionnaire books with the answer sheets inside. Make sure that each student has has or her questionnaire book.

Then say: NOW YOU ARE GOING TO COMPLETE PART TWO OF THIS QUESTIONNAIRE. DO NOT OPEN YOUR QUESTIONNAIRE BOOK OR TURN IT OVER UNTIL YOU ARE TOLD TO DO SO. PLACE THE BOOK ON YOUR DESK SO THAT YOU CAN READ THE COVER. CHECK TO MAKE SURE YOU HAVE THE BOOK WITH YOUR NAME ON IT. DOES ANYONE HAVE A BOOK WITH SOMEONE ELSE'S NAME ON IT?

Then say: YOU WILL MARK YOUR ANSWERS TO THE QUESTIONS IN PART TWO JUST AS YOU DID IN PART ONE. IF YOU FINISH BEFORE TIME IS CALLED, YOU MAY CHECK YOUR WORK ON PART TWO. DO NOT GO BACK TO PART ONE. REMEMBER TO CHECK THAT THE NUMBER OF THE ROW ON THE ANSWER SHEET IS THE SAME AS THE NUMBER OF THE QUESTION YOU ARE ANSWERING BEFORE YOU MARK YOUR ANSWER. IF YOU SKIP AN ITEM IN THE QUESTIONNAIRE, REMEMBER TO SKIP THE ANSWER ROW FOR THE ITEM ON YOUR ANSWER SHEET. NOW OPEN YOUR BOOK TO THE PAGE WHERE YOU PLACED YOUR ANSWER SHEET. CHECK TO MAKE SURE YOU HAVE THE ANSWER SHEET WITH YOUR NAME ON IT. DOES ANYONE HAVE AN ANSWER SHEET WITH SOMEONE ELSE'S NAME ON IT? (Make corrections). NOW FIND QUESTION 39 IN THE BOOK AND ALSO ON YOUR ANSWER SHEET. RAISE YOUR HAND IF YOU CANNOT FIND THIS QUESTION. (Assist). YOU WILL HAVE 20 MINUTES TO ANSWER THE QUESTIONS IN PART TWO. BEGIN WITH QUESTION 39. YOU MAY BEGIN.

The teacher should move quietly about the room to be sure that every student is working in the proper part of both the book and the answer sheet.

At the end of 20 minutes, say: STOP. LAY DOWN YOUR PENCIL.

Collect the answer sheets and questionnaire booklets. Check to make sure that the students names and ID numbers are properly gridded before placing the answer sheets in the enclosed confidential envelope. Return the envelopes to the ETS research representative at the end of the day.

THANK YOU!

880.01
September 1981

CLASSROOM ACTIVITIES

QUESTIONNAIRE

Level 4-5

GENERAL DIRECTIONS

Educational Testing Service, the National Institute of Education, and your school district are working together to improve the opportunities for students throughout the country. We are talking to students and teachers and we need your help. Your answers to the questions in this booklet are important in letting us know how to improve schools.

Do not spend very much time on any one question. If a question seems to be too difficult, or if the answers don't exactly say how you feel, choose the answer that is the closest to yours.

Mark your answers on the separate answer sheet. Mark only one answer for each question. If you want to change an answer, erase your first mark completely.

We hope you enjoy thinking about these questions.

EDUCATIONAL TESTING SERVICE

August 1981

DIRECTIONS

Read each question and possible answer. Find the lettered answer that best answers the question. Then find the row of circles on your answer sheet that has the same number as the question. In this row of circles, mark the letter of your answer.

See how this example is marked:

EXAMPLE 1

Are you a student? ANSWER: (A) (B) (C) (D) (E)

A Yes
B No

You are a student, so the answer to this question is YES. Circle A is marked because the letter in front of Yes is A.

Now answer this practice question:

EXAMPLE 2

Do you like peanut butter and jelly sandwiches? ANSWER: (A) (B) (C) (D) (E)

A Yes
B No

If you like peanut butter and jelly sandwiches, your answer would be Yes. Fill in circle A because the letter in front of Yes is A. If you do not like peanut butter and jelly sandwiches, your answer would be No. Fill in circle B because the letter in front of No is B.

Some questions are written as statements. You may agree or disagree with these statements. If you agree, mark Yes; if you disagree, mark No. Now answer this practice statement:

EXAMPLE 3

I enjoy playing kickball. ANSWER: (A) (B) (C) (D) (E)

A Yes
B No

If you agree with this statement and enjoy playing kickball, your answer would be Yes. Fill in circle A because the letter in front of Yes is A. If you disagree with this statement and you do not enjoy playing kickball, your answer would be No. Fill in circle B because the letter in front of No is B.

S T O P! Wait for further directions

PART I

1. Have you been in charge of a social studies class project during this school year?

   A Yes
   B No
   C We did not have any class projects in social studies

2. How often does your teacher divide your class into boys' groups and girls' groups to go places or do things? (For example, a girls' line and a boys' line.)

   A Always
   B Most of the time
   C Sometimes
   D Not very often
   E Never

3. Do you think that in your classroom it is better to be a boy, better to be a girl, or that it doesn't matter if you are a boy or a girl?

   A Better to be a boy
   B Better to be a girl
   C Doesn't matter

4. Which is more like how you feel?

   A I couldn't handle being class president
   B I could handle being class president

5. In class, when I don't understand a problem, I ask questions about it.

   A Yes (I do ask)
   B No (I don't ask)

6. Think of the best math student in your class. Is this person a boy or a girl?

   A A boy
   B A girl

7. Who make better leaders?

   A Boys
   B Girls
   C Don't know

8. Think of three people in your class that you would choose to do schoolwork with. They are:

   A All boys
   B All girls
   C Both boys and girls

9. Have you been in charge of writing a report with a group of other students in your class?

   A Yes
   B No
   C I haven't written a report with a group

10. Did the teacher who taught you math yesterday or today ask you to work at the same table or on a project with other students?

    A Yes, with a girl (or girls only)
    B Yes, with a boy (or boys only)
    C Yes, with both a girl and boy (or both girls and boys)
    D No, I worked by myself
    E No, I didn't have math yesterday or today

11. Do you think your teacher should choose only girls for certain kinds of jobs?

    A Yes
    B No

GO ON TO THE NEXT PAGE.

12. I like being in charge of a group of other students in my class.

A Yes
B No

13. I usually like to figure problems out by myself instead of getting my ideas from others.

A Yes
B No

14. Think of a person in your class who is the best reader. Is this person a boy or a girl?

A A boy
B A girl

15. Who make better class presidents?

A Boys
B Girls
C Don't know

16. Whom do you usually sit with in the lunch room?

A All boys
B All girls
C Both boys and girls

17. Have you taught or led a social studies lesson in front of the class during this school year?

A Yes
B No

18. Can a girl be a good friend to a boy?

A Yes
B No

19. When other people follow my suggestions, I feel good.

A Yes
B No

20. I often keep my ideas to myself because I think others may laugh at them.

A Yes (This is how I feel)
B No (I don't feel this way)

21. Think of the person in your class who is the best social studies student. Is this person a boy or a girl?

A A boy
B A girl

22. Do you think a woman should be the captain of a team of astronauts?

A Yes
B No

23. Which sports do you think boys and girls should play together or on the same team?

A No sports
B Tennis only
C Soccer, softball, and tennis
D Basketball, soccer, softball, and tennis
E Football, ice hockey, basketball, soccer, softball, and tennis

24. Have you given a report in front of the class that you and other students have written together?

A Yes
B No
C I haven't written a report with a group of other students

25. Do you think girls and boys want to study the same things?

A Yes
B No

GO ON TO THE NEXT PAGE.

26. I often keep my ideas to myself.

A Yes
B No

27. I often have an idea for an answer, but I don't tell because I am afraid it may be wrong.

A Yes (This is how I feel)
B No (I don't feel this way)

28. Think of the smartest person in your class. Is this person a boy or a girl?

A A boy
B A girl

29. You see a club that has both girls and boys in it. Who do you think is probably the club president?

A One of the boys
B One of the girls

30. Have you been a club officer during this school year?

A Yes
B No
C Our clubs do not have officers
D We do not have clubs

31. Yesterday or today have you worked with another student on solving a problem?

A Yes, with a girl (or girls only)
B Yes, with a boy (or boys only)
C Yes, with both a girl and a boy (or both girls and boys)
D No, I worked by myself
E No, I didn't work with another student on solving a problem yesterday or today.

32. I am often curious about unexplained things around me and want to try to understand them.

A Yes (This is how I feel)
B No (I don't feel this way)

33. Have you had a starring role in a class play during this school year?

A Yes
B No
C We have not had a class play.

34. I can easily get other students in my class to follow my ideas.

A Yes
B No

35. Most of the other students in my class have an easier time solving problems than I do.

A Yes (This is how I feel)
B No (I don't feel this way)

36. Have you been the announcer at a school assembly during this school year?

A Yes
B No
C We have not had any school assemblies

37. I am a better leader than most of the other students in my class.

A Yes
B No

38. When I'm trying to solve a problem I often don't know how to get started on it.

A Yes (I don't know how to get started on it)
B No (I do know how to get started on it)

STOP. IF YOU FINISH BEFORE TIME IS CALLED CHECK YOUR WORK ON THIS PART. DO NOT TURN TO PART II IN THIS BOOK.

PART II

39. Have you been in charge of a math class project during this school year?

A Yes
B No
C We did not have any class project in math

40. Did the teacher who taught you social studies this week or last week have you work at the same table or on a project with other students?

A Yes, with a girl (or girls) only
B Yes, with a boy (or boys) only
C Yes, with both a girl and a boy (or both boys and girls)
D No, I worked by myself
E No, I didn't have social studies this week or last week

41. Do you think your teacher should choose only boys for certain kinds of jobs?

A Yes
B No

42. My ideas for solving problems are about as good as those given by others in the class.

A Yes
B No

43. Think of the person in your class who writes the best reports. Is this person a boy or a girl?

A A boy
B A girl

44. Who make better bosses?

A Boys
B Girls
C Don't know

45. Think of three people in your class that you would like to work with on a project. They are:

A All boys
B All girls
C Both boys and girls

46. Have you been in charge of a science class project during this school year?

A Yes
B No
C We did not have any class projects in science

47. Did the teacher who taught you science this week or last week ask you to work at the same table or on the same project with other students?

A Yes, with a girl (or girls) only
B Yes, with a boy (or boys) only
C Yes, with both a girl and a boy (or both boys and girls)
D No, I worked by myself
E No, I didn't have science this week or last week

48. Do you think girls and boys are interested in doing the same things?

A Yes
B No

49. I would like to be class president.

A Yes
B No

GO ON TO THE NEXT PAGE.

50. Most of the students in my class are better at solving problems than I am.

A Yes
B No

51. Think of the person in your class who comes up with the best ideas. Is this person a boy or a girl?

A A boy
B A girl

52. Do you think a woman should be elected president of the United States?

A Yes
B No

53. You see a girl and a boy who are working together on a class project. This is probably because

A the teacher told them to work together
B they wanted to work together

54. Have you taught or led a math lesson in front of the class during this school year?

A Yes
B No

55. Did the teacher who taught you language arts yesterday or today ask you to work at the same table or on the same project with other students?

A Yes, with a girl (or girls) only
B Yes, with a boy (or boys) only
C Yes, with both a girl and a boy (or both girls and boys)
D No, I worked by myself
E No, I didn't have language arts yesterday or today

56. Can a boy be a good friend to a girl?

A Yes
B No

57. I like sharing my ideas with my class.

A Yes
B No

58. When I work on problems I often find I haven't paid attention to some important fact.

A Yes (This is how I feel)
B No (I don't feel this way)

59. Think of the best problem solver in your class. Is this person a boy or a girl?

A A boy
B A girl

60. You see a sports team that has both boys and girls on it. Who do you think is probably the captain of this team?

A One of the boys
B One of the girls

61. In gym or P.E., which team would you like most to join?

A A team that had all boys or mostly boys
B A team that had all girls or mostly girls
C A team having about the same number of girls and boys

62. Have you taught or led a science lesson in front of the class during this school year?

A Yes
B No

GO ON TO THE NEXT PAGE.

63. Do you think girls and boys want to grow up to do the same kinds of work?

A Yes
B No

64. Which is more like how you feel?

A I don't like to talk in front of my class
B I do like to talk in front of my class

65. Sometimes I get confused when I am trying to think.

A Yes
B No

66. Think of the person in your class who gives the best speeches or reports in front of the class. Is this person a boy or a girl?

A A boy
B A girl

67. Have you been the captain of a sports team during this school year?

A Yes
B No
C Our sports teams do not have captains
D We do not have sports teams

68. Which is more like how you feel?

A When I try to be a leader, I often <u>don't</u> know what to do first
B When I try to be a leader, I often <u>do</u> know what to do first

69. The other students in my class pay attention to my ideas and suggestions.

A Yes
B No

70. Have you been the president of your class during this school year?

A Yes
B No
C Our class does not have a president

71. I feel butter when someone else in my class is the leader.

A Yes
B No

72. I can solve most problems if I just look at them long enough.

A Yes
B No

73. Have you made an announcement over the school public address system during this school year?

A Yes
B No
C Students do not make announcements over the school public address system
D Our school does not have a public address system

74. Other students in my class make better leaders than I do.

A Yes
B No

75. If I think I know how to solve a problem, I'm willing to share my ideas with others.

A Yes
B No

GO ON TO THE NEXT PAGE.

76. Yesterday or today did your teacher ask you to work on solving a problem with other students?

A Yes, with a girl (or girls only)
B Yes, with a boy (or boys only)
C Yes, with both a girl and a boy (or both girls and boys)
D No, I worked by myself
E No, I didn't work on solving a problem with other students yesterday or today

STOP. IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON PART II. DO NOT GO BACK TO PART I IN THIS BOOK.

CAQ ITEMS COMPRISING SCALES

Scale name	Items
Student competence (STUCOMP)	6, 14, 21, 28, 43, 51, 59, 66
Gender stereotypes (STEREO)	3, 11, 18, 25, 41, 48, 56, 63
Attitude toward cooperation (ATTCOOP)	8, 16, 45, 53, 61, 23
Leadership attitude (ATTLEAD)	7, 15, 44, 29, 60, 22, 52
Leadership self-perception (SLFLEAD)	4, 12, 19, 26, 34, 37, 49, 57 64, 68, 71, 74
Problem solving self-perception (PROBSOL)	5, 13, 20, 27, 31, 32, 35, 38, 42, 50, 58, 65, 69, 72, 75
Cooperative experiences (COOPEXP)	2, 10, 40, 47, 55
Leadership experience (LEADEXP)	1, 9, 17, 24, 30, 33, 36, 39, 46, 54, 62, 67, 70, 73

Appendix I

Sociometric Roster and Instructions

WORKING WITH CLASSMATES

Student Sociometric Measure
Administration Instructions

DISTRIBUTE COMPUTER GENERATED CLASS LISTING TO EACH CHILD.

SAY "Good (morning/afternoon). My name is _____. Today, I am going to ask you to do an exercise about working on a Science project with other students in your class. I have handed you a list of all the students in your homeroom class. Please check to see that your name is on the printed label in the upper right hand corner. Does anyone not have a list with his or her name in the upper right hand corner?"

PAUSE. IF SOMEONE RAISES HIS OR HER HAND, ASK HIS/HER NAME, WRITE IT ON A BLANK FORM AND ON THE BLACKBOARD. GIVE HIM OR HER THE BLANK FORM.

SAY "Now read all the names on this list; is anyone's name missing?"

PAUSE. WRITE THE NAMES OF ALL MISSING STUDENTS ON THE BLACKBOARD, IF NECESSARY.

SAY "Please look at the bottom of the list of names on your computer printout. There are several blank lines; write _____'s name on the first line, _____'s name on the second line (etc.) as written here on the blackboard. Is everyone finished?"

SAY "Next to each name including the names you have written, there are three choices about how you would feel about working with this person on a Science project. You will notice that the choices next to your own name have been Xed out. Is there anyone whose own name is not Xed out?"

PAUSE. CORRECTIONS.

SAY "I would like you to go down this list of student names and for each name (including the ones you have written) circle the statement that is most like how you would feel about working together on a Science project. If you would really like to work with this student on a Science project, circle the words, would really like to work with."

DEMONSTRATE.

SAY "If you would not mind working with this student, circle the words in the second column, would not mind working with."

DEMONSTRATE.

SAY "If you would mind working together on a Science project, circle the words in column three, would mind working with."

DEMONSTRATE.

SAY "Do this for every name on this list (including the names you have written). Remember to make only one choice for each name by circling one of the following columns:

Column one, would <u>really like</u> to work with,

Column two, <u>would not mind</u> working with, or

Column three, <u>would mind</u> working with

Are there any questions?

ANSWER QUESTIONS.

SAY "You will have ten minutes to do this exercise. You may begin now.

WAIT TEN MINUTES. COLLECT SOCIOMETRICS. THANK CLASS AND TEACHER.

DIONNE B
NARAM
CANE
020330052

HOME ROOM TEACHER: CANE — CIRCLE ONE STATEMENT FOR EACH CLASSMATE

GWENVESTIAA	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30012
TERRY A	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30021
ERIC A	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30031
KEVIN B	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30041
DIONNE B	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXXX	30052
VICKY B	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30062
MICHAEL B	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30071
GREGORY C	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30081
KENNETH C	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30091
WILLIAM C	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30101
CHOLANDA C	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30112
MATTHEW D	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30121
MATTHEW D	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30131
DIANE F	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30142
THOMAS G	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30151
APRIL G	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30162
KATHLEEN H	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30172
MELVIN H	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30181
DIANE J	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30192
DOUGLAS K	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30201
AMY K	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30212
CHRISTOPHEL	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30221
LYNN L	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30232
SCOTT M	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30241
MICHAEL M	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30251
KATHERINE M	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30262
STEPHEN O	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30271
MICHAEL R	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30281
ANDREA S	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30292
TRACY S	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30302
JUANCARLOSS	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30311
CALVIN T	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30321
MARK T	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30331
TROY V	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30341
CRISTINA W	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30352
DAVID Z	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30361
KEVIN T	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	30371
_____	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	_____
_____	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	_____
_____	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	_____
_____	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	_____
_____	WOULD REALLY LIKE TO WORK WITH	WOULD NOT MIND WORKING WITH	WOULD MIND WORKING WITH	_____

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Appendix J

Lost on the Moon and Instructions

"LOST ON THE MOON"

Administration Instructions

SAY "Good (morning/afternoon). My name is _____. Today, we're going to do an interesting exercise called "Lost on the Moon". I'd like you to listen to the following story and then we'll do this Lost on the Moon exercise to find out what you think are the solutions.

Your space ship has just crashlanded on the moon. You were scheduled to meet up with the mother ship 200 miles away on the lighted side of the moon's surface, but the rough landing has ruined your ship. All of your equipment is destroyed except for (the fifteen items on this list/ these fifteen items.)

SHOW LIST

The survival of your crew depends upon reaching the mother ship. In order to do this you must pick the most important items available for the 200 mile trip. Your task is to rank the fifteen items according to how useful they will be for survival. Put a "1" next to the most important item a "2" next to the next most important item, a "3" next to the third most important item and so on. Put a "15" next to the least important item.

First, you'll do this by yourself, then you will have a chance to work with a team to rank the items. You should think carefully about how important each item is for survival as you make your rankings.

Do you have any questions?

PASS OUT "15" ITEMS SAVED FROM THE SPACESHIP" LISTINGS

SAY "I am passing out to each of you a yellow copy and a green copy of the list of 15 items saved from the spaceship. Your name should be on the label at the top of the green sheet. Please check to make sure your name is on the label. Does anyone have a list with the wrong name on the top?

CHECK TO MAKE SURE EVERYONE HAS THEIR OWN LISTS

SAY "Is there anyone who does not have a list? Please raise your hand."

GIVE BLANK FORM TO ANYONE WHO DOES NOT HAVE A LIST WITH A COMPUTER LABEL AND INSTRUCT THEM TO WRITE THEIR NAME IN THE SPACE AT THE TOP OF THE GREEN LIST

SAY "Please follow along with me as I read the list of items on the yellow and green sheets. If you do not know what an item is, please raise your hand and I will describe the item."

READ THE LIST OF ITEMS AND ANSWER QUESTIONS

SAY Write your rankings on the yellow list. Remember that the most important item is ranked "1" and the least important item is ranked "15". You will have ten minutes to make your rankings. After you have made your rankings, please copy them from the yellow list to the green list. Then raise you hand and I will collect the green list. Now you may begin ranking the items.

WAIT 10 MINUTES COLLECT GREEN SHEETS

SAY "Please stop. Does anyone still have the green sheet? Please raise your hand."

COLLECT REMAINING GREEN SHEETS

SAY "The second part of this activity involves working with a team to make these rankings of 15 items saved from the spaceship. When you work with your team it will be important that you all agree about how the items should be ranked."

Each group has been picked by the computer. I am going to call your name to show you where to sit with your team. Please bring your yellow list with you as a reference. Do you have any questions?

ORGANIZE TEAMS ACCORDING TO THE ATTACHED SCHEDULE. PASS OUT WHITE LIST

SAY "I am passing out to each team another list of the 15 items saved from the spaceship. Please check to make sure that labels with the names of all members of your team are at the top of the white list. Please work quietly with your team to rank these items. Make sure you write your team rankings on the white list. You will have 10 minutes to make your team rankings. Raise your hands when you have finished. Do you have any questions? You may begin ranking these items."

WAIT 10 MINUTES. AFTER EACH TEAM COMPLETES ITS LIST, GO OVER TO THE TEAM

SAY "Now that your team has made your decisions, there is one more decision we would like you to make as a team. Please decide which person in your team was the team leader, that is, which person had the best ideas and did the most to guide and direct the team. Please write that persons name at the bottom of the white list.

COLLECT WHITE LISTS

SAY "I want to thank all of you for doing this exercise. Now we can see what some experts at NASA condered to be the correct ranking.

WRITE ON BLACKBOARD. REVIEW ATTACHED NASA LISTING WITH STUDENTS. ALLOW NO MORE THAN 5 MINUTES FOR THIS, OR ASK TEACHER IF HE/SHE WOULD LIKE TO REVIEW THIS EXERCISE WITH THE CLASS. THANK TEACHER AND LEAVE.

NASA SOLUTION

15 ITEMS SAVED FORM THE SPACESHIP

	NASA RANK ORDER
_____ a box of matches	(13)
_____ food concentrate	(5)
_____ 50 feet of rope	(6)
_____ a parachute	(7)
_____ a heater	(11)
_____ two pistols	(12)
_____ 24 boxes of dried milk	(9)
_____ two 100 pound tanks of oxygen	(1)
_____ star map of the moon's sky	(4)
_____ a lift raft	(14)
_____ a magnetic compass	(15)
_____ 5 gallons of water	(2)
_____ signal flares	(10)
_____ a first aid kit	(8)
_____ a solar powered FM walkie-talkie	(3)

Name_____

Teacher_____

School_____

15 ITEMS SAVED FROM THE SPACESHIP

Yellow List
Your Ranking

_____ a box of matches

_____ food concentrate

_____ 50 feet of rope

_____ a parachute

_____ a heater

_____ two pistols

_____ 24 boxes of dried milk

_____ two 100 pound tanks of oxygen

_____ star map of the moon's sky

_____ a life raft

_____ a magnetic compass

_____ 5 gallons of water

_____ signal flares

_____ a first aid kit

_____ a solar powered FM walkie-talkie

Remember, 1 is most important
15 is least important

COPY ON TO GREEN LIST

15 ITEMS SAVED FROM THE SPACESHIP

Green List

_____ a box of matches

_____ food concentrate

_____ 50 feet of rope

_____ a parachute

_____ aheater

_____ two pistols

_____ 24 boxes of dried milk

_____ two 100 pound tanks of oxygen

_____ star map of the moon's sky

_____ a life raft

_____ a magnetic compass

_____ 5 gallons of water

_____ signal flares

_____ a first aid kit

_____ a solar powered FM walkie-talkie

15 ITEMS SAVED FROM THE SPACESHIP

White List
Your Team's Ranking

_____ a box of matches

_____ food concentrate

_____ 50 feet of rope

_____ a parachute

_____ a heater

_____ two pistols

_____ 24 boxes of dried milk

_____ two 100 pound tanks of oxygen

_____ star map of the moon's sky

_____ a life raft

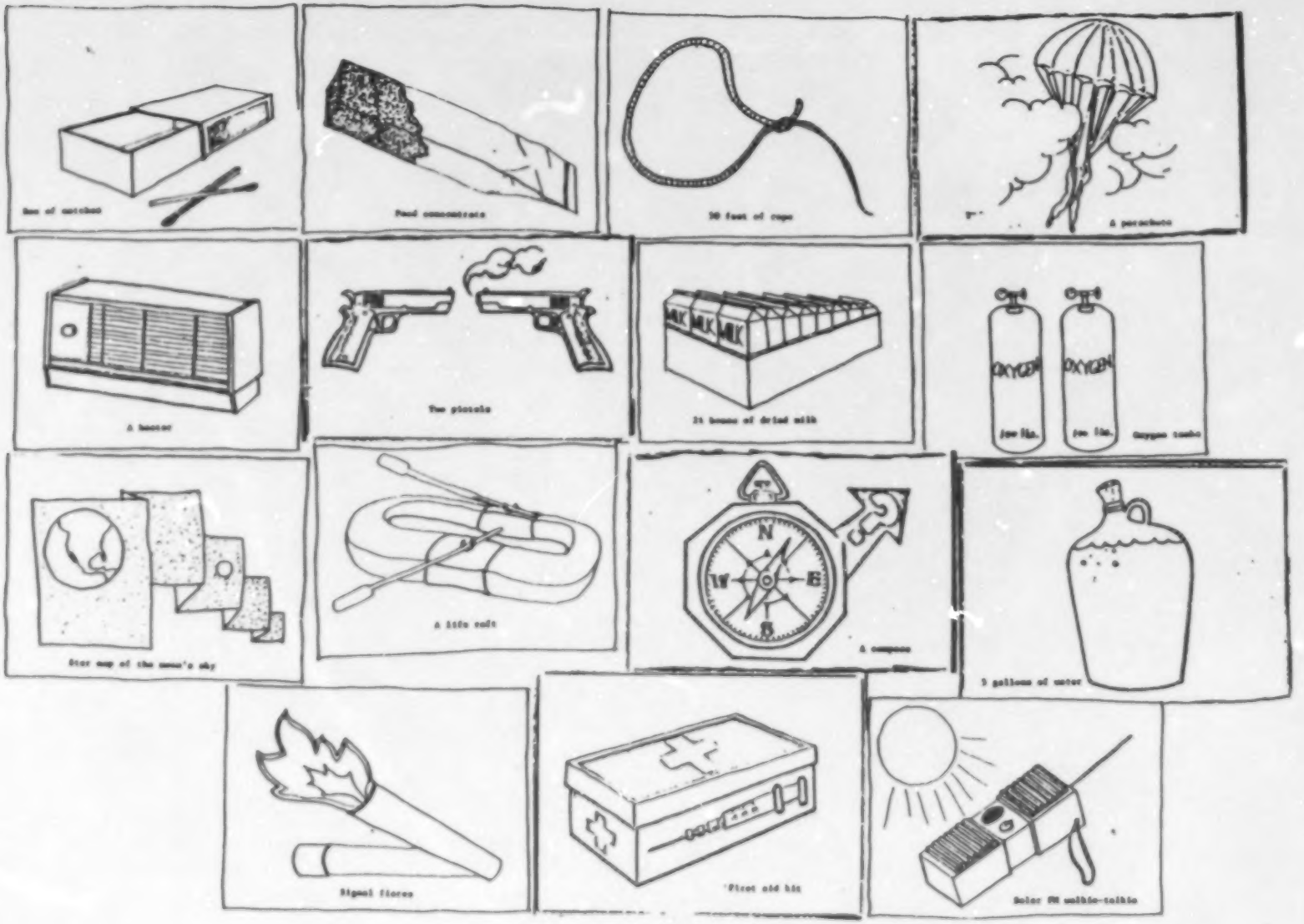
_____ a magnetic compass

_____ 5 gallons of water

_____ signal flares

_____ a first aid kit

_____ a solar powered FM walkie-talkie



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Appendix K

Desert Survival and Instructions

"Desert Survival"

Administration Instructions

SAY "Now you're going to do an interesting exercise called "Desert Survival." I'd like you to listen to the following story, and then we'll do this Desert Survival exercise to find out what you think are the solutions.

Imagine that you and three others are flying a small helicopter over the desert in August. Suddenly a sandstorm comes up and the helicopter crashes. You and the others in the helicopter escape without injury, but the helicopter is burned completely. You were unable to notify anyone of your position before the crash. After the sandstorm has died down, you realize that you dc not know where you are. However, you know that you are probably about 70 miles from a mining camp.

The desert area that you find yourselves in is flat and, except for cacti, appears to have no life. The last weather report said the temperature would reach 130 degrees that day. You are all dressed in lightweight clothing.

Before the helicopter caught fire your group was able to gather these 15 items.

PASS OUT PICTURES

Your task is to rank the fifteen items according to how useful they will be for survival. Put a "1" next to the most important item, a "2" next to the second most important item, a "3" next to the third most important item and so on. Put a "15" next to the least important item.

First, you'll do this by yourself; then you will have a chance to work with a team to rank the items. You should think carefully about how important each item is for survival as you make your rankings.

Do you have any questions?

PASS OUT "15" ITEMS SAVED FROM THE HELICOPTER LISTINGS

SAY "I am passing out to each of you a yellow copy and a green copy of the list of 15 items saved from helicopter. Your name should be on the label at the top of the green sheet. Please check to make sure your name is on the label. Does anyone have a list with the wrong name on the top?

CHECK TO MAKE SURE EVERYONE HAS HIS/HER OWN LISTS

SAY "Is there anyone who does not have a list? Please raise your hand."

380.01
May 1981

GIVE BLANK FORM TO ANYONE WHO DOES NOT HAVE A LIST WITH A COMPUTER LABEL AND INSTRUCT HIM/HER TO WRITE HIS/HER NAME IN THE SPACE AT THE TOP OF THE GREEN LIST

SAY "Please follow along with me as I read the list of items on the yellow and green sheets. If you do not know what an item is, please raise your hand, and I will describe the item."

READ THE LIST OF ITEMS AND ANSWER QUESTIONS

SAY "Write your rankings on the yellow list. Remember that the most important item is ranked "1" and the least important item is ranked "15." You will have ten minutes to make your rankings. After you have made your rankings, please copy them from the yellow list to the green list. Then raise your hand, and I will collect the green list. Now you may begin ranking the items.

WAIT 10 MINUTES; THEN COLLECT GREEN SHEETS

SAY "Please stop. Does anyone still have the green sheet? Please raise your hand."

COLLECT REMAINING GREEN SHEETS

SAY "The second part of this activity involves working with a team to make these rankings of 15 items saved from the helicopter. When you work with your team, it will be important that you and your team agree about how the items should be ranked."

"I am going to call your name to show you where to sit with your team. Please bring your yellow list with you as a reference. Do you have any questions?"

ORGANIZE PAIRS/TEAMS ACCORDING TO THE ATTACHED SCHEDULE. PASS OUT WHITE LIST

SAY "I am passing out to each team another list of the 15 items saved from the helicopter. Please check to make sure that labels with the names of all members of the team are at the top of the white list. Please work quietly with your team to rank these items. Make sure you write your team rankings on the white list. You will have 10 minutes to make your team rankings. Raise your hands when you have finished. Do you have any questions? You may begin ranking these items."

WAIT 10 MINUTES. COLLECT WHITE LIST

SAY "I want to thank all of you for doing this exercise. You might be interested to know that a team of experts on wilderness survival has done this same task and came up with what they consider to be the very best ordering."

WRITE ON BLACKBOARD. REVIEW ATTACHED EXPERTS' LISTING WITH STUDENTS. ALLOW NO MORE THAN 5 MINUTES FOR THIS, OR ASK TEACHER IF HE/SHE WOULD LIKE TO REVIEW THIS EXERCISE WITH THE CLASS. THANK TEACHER AND LEAVE.

880.01
May 1981

EXPERTS' RANKING

15 ITEMS SAVED FROM THE HELICOPTER

	EXPERTS' RANK ORDER
___ a flashlight	(4)
___ a knife	(6)
___ an air map of the area	(12)
___ plastic raincoat	(7)
___ a compass	(11)
___ a first aid kit	(10)
___ a loaded pistol	(8)
___ a parachute	(5)
___ a bottle of salt tablets	(15)
___ one quart of water per person	(3)
___ a book on edible animals of the desert	(13)
___ 2 quarts of 180-proof vodka	(14)
___ a pair of sunglasses per person	(9)
___ one jacket per person	(2)
___ a mirror	(1)

Name _____

Teacher _____

15 ITEMS SAVED FROM THE HELICOPTER

Yellow List
Your Ranking

___ a flashlight

___ a knife

___ an air map of the area

___ a plastic raincoat

___ a compass

___ a first aid kit

___ a loaded pistol

___ a parachute

___ a bottle of salt tablets

___ one quart of water per person

___ a book on edible animals of the desert

___ 2 quarts of 180-proof vodka

___ a pair of sunglasses per person

___ one jacket per person

___ a mirror

REMEMBER, 1 is most important
15 is least important

COPY ON TO GREEN LIST

15 ITEMS SAVED FROM THE HELICOPTER

Green List

___ a flashlight

___ a knife

___ an air map of the area

___ a plastic raincoat

___ a compass

___ a first aid kit

___ a loaded pistol

___ a parachute

___ a bottle of salt tablets

___ one quart of water per person

___ a book on edible animals of the desert

___ 2 quarts of 180-proof vodka

___ a pair of sunglasses per person

___ one jacket per person

___ a mirror

15 ITEMS SAVED FROM THE HELICOPTER

White List
Your Team's Ranking

___ a flashlight

___ a knife

___ an air map of the area

___ a plastic raincoat

___ a compass

___ a first aid kit

___ a loaded pistol

___ a parachute

___ a bottle of salt tablets

___ one quart of water per person

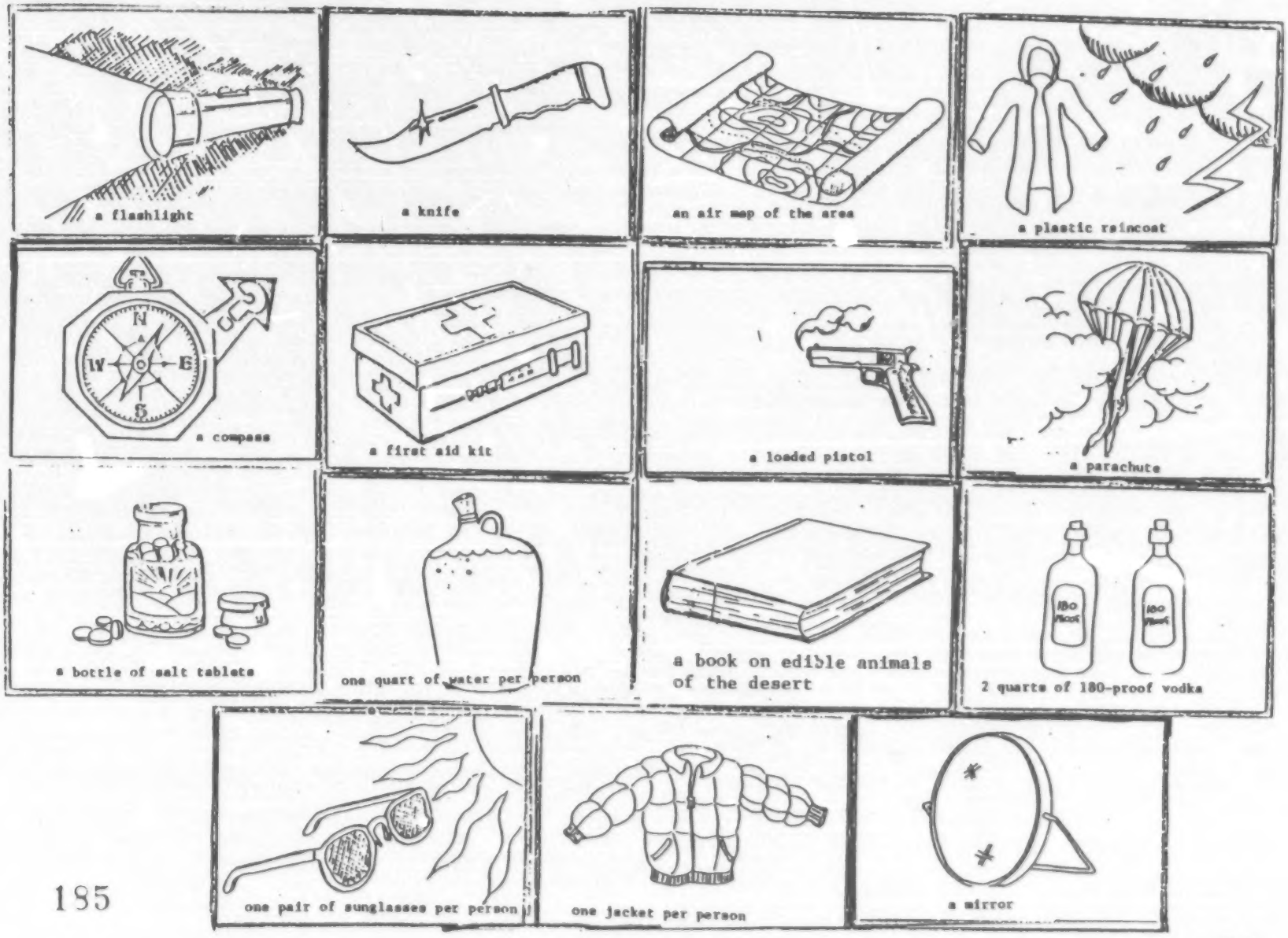
___ a book on edible animals of the desert

___ 2 quarts of 180-proof vodka

___ a pair of sunglasses per person

___ one jacket per person

___ a mirror


a flashlight
a knife
an air map of the area
a plastic raincoat
a compass
a first aid kit
a loaded pistol
a parachute
a bottle of salt tablets
one quart of water per person
a book on edible animals of the desert
2 quarts of 180-proof vodka
one pair of sunglasses per person
one jacket per person
a mirror